LOSS AND DISCARD OF TRADITIONAL ECOLOGICAL KNOWLEDGE: ARCHAEOLOGY OF CATAWBA FOODWAYS

Rosemarie Blewitt

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Approved by:

C. Margaret Scarry

Vincas P. Steponaitis

Brett H. Riggs

ABSTRACT

Rosemarie Blewitt: Loss and Discard of Traditional Ecological Knowledge: Archaeology of Catawba Foodways (Under the direction of C. Margaret Scarry)

Erosion of traditional ecological knowledge in local communities has generally been studied using ethnographic and ethnohistorical data. I argue that changes in foodways related to the loss of traditional ecological knowledge can also be observed in the archaeological record. I analyzed archaeobotanical remains recovered from two historic period Catawba sites, the Old Town and the New Town sites, and compared them with assemblages from other Catawba sites to track changes in plant use over time. The Catawba Nation, located in South Carolina, underwent coalescence and ethnogenesis in response to the turmoil of the colonial world. I propose that people living at Old Town and New Town, having lost significant traditional ecological knowledge during earlier crises, were in the process of discarding that knowledge as part of the Catawbas' active strategy of survival that focused on succeeding in the colonial market economy at the expense of traditional subsistence economies.

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CHAPTER 1: INTRODUCTION

The disruption of communities and corresponding losses of traditional ecological knowledge over the past century has been explored frequently in the anthropological literature. While most of these studies are based on ethnographic investigations of current social groups, this process could also be examined through the archaeological record, which would provide scholars with a much longer view of how these disruptions and losses affect and are affected by people and their environment. I will discuss the archaeological evidence from my analysis of the Catawba Old Town site (SoC634) and New Town site (SoC632 and SoC635), previous work done on the sites of Nassaw-Weyapee (38YK434), Charraw Town (38YK17), and Ayers Town (38YK534), and the ethnographic literature on loss of traditional ecological knowledge to suggest that the Catawba people may have lost and discarded that knowledge throughout the historic period. The Old Town and New Town sites were excavated as part of the University of North Carolina's Research Laboratories of Archaeology (RLA) Catawba project. This project, an extension of the Siouan project that seeks to trace the evolution of native societies of the Carolina piedmont, involved the excavation of other Catawba sites occupied between c. 1750 and 1820 including Charraw Town, Nassaw-Weyapee, and Ayers Town (Figure 1.1) (Davis and Riggs 2004).

Foodways, defined as "the whole interrelated system of food conceptualization, procurement, distribution, preservation, preparation, and consumption shared by all members of a particular group," are shaped in part by cultural influences and symbolize and enact cultural

values (Deetz 1977: 73). I analyzed data from archaeobotanical remains to determine what plants were being used at Old Town and New Town, how these compared to other Catawba occupations, how they fit into other lines of evidence including faunal remains, ceramics, and ethnohistorical records, and what these changes (or lack thereof) in Catawba foodways tell us about the Catawba colonial experience and the process of coalescence. Through this thesis, I will illustrate (1) what plants people used at Old Town and New Town, (2) how foodways at Old Town and New Town compared to the foodways of their ancestors, (3) how changes in Catawba foodways relate to particular historical circumstances, and (4) how historical events and processes influenced the maintenance and transmission of traditional ecological knowledge related to foodways.

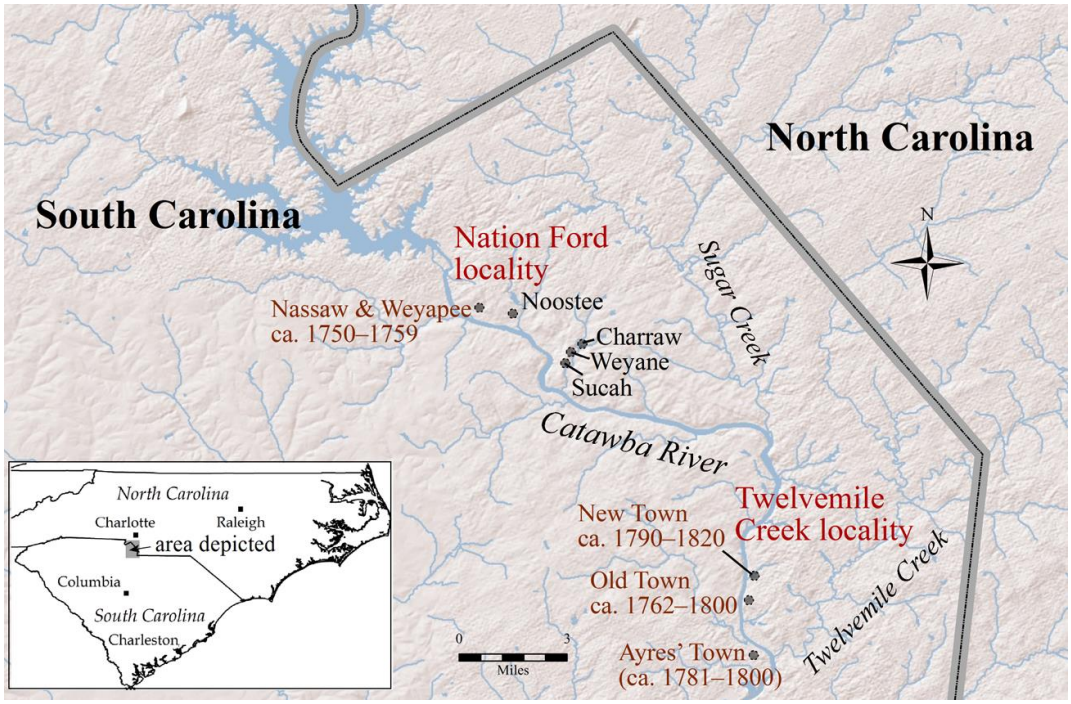

Figure 1.1 Map of sites excavated as part of the UNC Research Laboratories of Archaeology Catawba project (courtesy of Brett Riggs).

I begin my argument in chapter 2, where I discuss the theoretical background and ethnographic literature regarding loss of traditional ecological knowledge (TEK). While the ethnographic examples that I draw on are separated from the Catawba Nation by time and space, I argue that some of the general points regarding the practice, maintenance, and loss of TEK in local communities could reasonably be applied to the Catawba example. I go on to discuss the history of the Catawba Nation from the shatter zone period (A.D. 1540-1715), through the coalescent period (A.D. 1715-1800), and finally the post-coalescent period (A.D. 1800-present). I consider the historical events and processes of those time periods (such as the deer skin trade and various epidemics), and propose that these events and processes would have differentially impacted groups of people within the Catawba Nation based on gender and age. I suggest that members of the Catawba Nation may have ultimately prioritized traditional knowledge of pottery making as the best way to make their livelihood and preserve their nation, leading to further loss and discard of TEK regarding growing and gathering their own food.

After explaining the theoretical basis of my hypothesis that the Catawba Nation lost and discarded traditional ecological knowledge in response to the instability of the colonial world, I move on in chapter 3 to describe the background to the Catawba Project. The RLA launched the Catawba Project in 2001 with goals to:

> Trace the evolution of native societies in the Carolina piedmont through the eighteenth and early nineteenth centuries… to illuminate the emergence of the modern Catawba Nation in the early eighteenth century, and to document the creative adaptations that have enabled the endurance of the Catawba people in their ancient homeland. (Davis and Riggs 2004: 2)

The Catawba Project continues to the present and has been the subject of many dissertations and other publications, providing a rich dataset to draw upon in my own analysis. In chapter 4, I present the results of my paleoethnobotanical analysis of Old Town and New Town. These

assemblages, though they contained many of the expected plant taxa including corn, nuts, and a variety of fruits, were nevertheless relatively sparse compared to assemblages from older Catawba and piedmont sites.

In chapter 5, I compare the results of my own analysis with the datasets from three other Catawba sites – two sites from an earlier time period (Charraw Town and Nassaw-Weyapee) and the roughly contemporaneous Ayers Town. Using correspondence analysis, a statistical technique that maps associations between categories based on abundance, I investigated diachronic changes in plant use over the roughly 70-year time period over which those sites were occupied. Based on those tests, I argue that after the demographic collapse corresponding with the A.D. 1759 smallpox epidemic, the Catawba people greatly curtailed their own food production activities and instead focused their energy on their growing success as itinerant potters. Looking farther back in time to the piedmont groups that were the likely ancestors of the Catawbas, I included botanical data from the Wall, Fredricks, and Jenrette sites in North Carolina. Comparison with those assemblages suggests that the Catawba people living at pre-1759 towns may actually have practiced more diverse plant use than they had previously, but soon abandoned those practices during the turmoil of the late eighteenth century.

In chapter 6, I look at the relationship between plant and animal use at the Catawba sites to get a more holistic view of their foodways. The addition of faunal data showed that the changes in traditional subsistence practices did not occur uniformly among all members of the group. While traditional plant use greatly diminished after the 1759 epidemic, this pattern was not reflected in the faunal remains. Given the traditional roles of Catawba men and women for food production, it may be that women's work changed in different ways then men's work and that their transmission of TEK was maintained in distinct ways.

Finally, in chapter 7 I discuss the beginning of the Catawba pottery trade and how engagement with that new, flourishing market created very different financial incentives for the Catawba people. I argue that following extreme losses of people, land, and subsistence TEK, members of the Catawba Nation may have chosen to maintain their traditional pottery making practices at the expense of their traditional subsistence. The Catawba people continue their very successful pottery production today, a testament to the skill, strength, and resilience of their community.

CHAPTER 2: LOSS AND DISCARD OF TRADITIONAL ECOLOGICAL KNOWLEDGE

Who produced the food eaten at Old Town, New Town, and other Catawba sites, who consumed the food, and who passed on and received traditional knowledge of foodways there? By the time of Henrietta Liston's visit to the Catawba Nation in 1797, the Nation numbered about 300 people. This was part of a significant demographic decline in the eighteenth century due primarily to European-introduced diseases, but also affected by the earlier Indian slave trade and associated wars (McReynolds 2004). McReynolds used ethnohistorical records to track population decline and eventual resurgence in the Catawba Nation during the eighteenth and nineteenth centuries. She stated that the population loss "encouraged tribal and ethnic merging, upset cultural norms and eliminated traditional knowledge, altered relationships between humans and their natural environment, and brought about changes in settlement and subsistence practices" among other important cultural transformations (McReynolds 2004: 42).

Traditional ecological knowledge is defined as "the cumulative environmental knowledge, belief, and practice of local and indigenous people. TEK is a product of enduring links between humans and environments" (McCarter and Gavin 2014: 288). It is most often transmitted within households through socialization, and requires close relationships and interactions between family members, particularly between different generations, to pass on that knowledge (Setalaphruk and Price 2007). While this type of knowledge is traditional, it must be recognized that it is never static, and not every member of a culture group will receive and remember the same amount of knowledge; different levels of knowledge are frequently stratified

by age and gender (McCarter and Gavin 2014; Setalaphruk and Price 2007). Erosion and loss of TEK can be affected by internal and external forces, and are frequently associated with other social changes such as new and shifting market economies.

Setalaphruk and Price (2007) conducted an ethnographic study of children's traditional ecological knowledge of wild foods in a rural village in northeast Thailand to examine breaks in intergenerational transfer of knowledge. This village was especially interesting to the researchers because it is a community where many parents migrate to more populous cities to find work, often leaving children behind in the care of their grandparents. The researchers hypothesized that children raised primarily by their grandparents might have less TEK because family wholeness is an important factor in the transmission of TEK. They suggested that changes in household composition might hinder transmission of this knowledge, leading to its loss. They found that there was no observable difference in knowledge between those children raised by their grandparents and those raised by parents. Children in both groups retained the skill to name wild food sources. Nevertheless, children's practical in-depth knowledge of how to find and use those sources was eroding. Setalaphruk and Price attributed the lack of difference between knowledge of children with or without migrant parents to alternate channels of learning that information, where both grandparents and the children's own peer group can provide them with information and practice that they cannot get from their parents.

This research showed that reception and retention of TEK among children is most significantly linked to children's own valuation of foods (Setalaphruk and Price 2007: 6). Children had better knowledge of those plants that taste good and are highly marketable, indicating that the value judgment is based both on personal preference and on community and household values. While abundance and availability of plants in their surrounding environment

had some impact on those plants with which children were most familiar, there were numerous easily obtained plants that children did not gather or know as much about because they did not have a desirable taste and had a low marketability.

Brembeck's (2009) ethnographic study of changing foodways among immigrant families focused on how children engage with shifting foodscapes. The author interviewed Bosnian and Iraqi families living as immigrants in Sweden to understand how they incorporated newly available foods (particularly fast food and junk food) into their diets. Brembeck strongly underscored the importance of understanding children's acquisition of knowledge and construction of perceptions of foodways in changing foodscape contexts. Brembeck concluded that "children's 'becoming other' in frontiering foodscapes needs to be highlighted in order to better understand processes of integration, as well as children's agency more generally, and the importance of food in this respect" (2009: 145).

McCarter and Gavin researched another current case of loss of TEK (2014) in their study among three communities on Malekula Island in Vanuatu. They identified two key periods of TEK erosion (roughly 1940-1960 and 1980-present) and solicited local perspectives on what forces were causing the erosion of knowledge. The beginning of TEK loss was attributed to the arrival of missionaries. After several decades an independence movement temporarily halted loss and emphasized revival of TEK practices. The latest period of loss was attributed to increase in formal education and the consolidation of the roles of churches in each community. McCarter and Gavin also asked participants about three interconnected dimensions of TEK: knowledge (ability to recognize and name resources), practice (practical skills, such as when and where to collect those resources), and belief (specifically in the belief of spirits called 'devils' of the bush) to get a more nuanced understanding of how TEK was being eroded. They found erosion of TEK

varied; for instance, practices related to medicinal plants underwent little change, whereas belief in the 'devils' of the bush underwent major changes or disappeared altogether (McCarter and Gavin 2014: 292).

McCarter and Gavin argued that loss of TEK is a complex and dynamic process, and that these losses are due not only to external but also internal forces. Participants in their study were concerned by loss of 'respect' for the environment within younger generations, and suggested that loss of TEK happened because of the inattention and lack of appreciation for ecological knowledge by the community at large (McCarter and Gavin 2014: 294). In their conclusion, they addressed the contemporary concern with preserving TEK and stated "TEK maintenance is only likely to succeed if genuinely driven from within the community" (2014: 295). McCarter and Gavin's perspective on TEK loss in Vanuatu is useful because it acknowledges that these changes are not purely unintended consequences of instability and ecological degradation, but are also the result of community members not prioritizing that knowledge because it is no longer useful to them. It is important to emphasize that erosion of traditional ecological knowledge need not be seen only as a passive response to colonialism, but can also be an active adaptive strategy in response to new pressures.

Catawba Traditional Ecological Knowledge and Colonial Instability

Transmission of traditional ecological knowledge would have been at risk among historic Native American groups due to the instability and high mortality of the colonial period. Lankford (2008) discussed knowledge loss in systems of oral knowledge transmission (with a particular focus on native stories), and highlighted case studies of historical Shawnee, Cherokee, and Creek events where traditional knowledge was lost as religious practitioners and traditionalists were

targeted and killed. He argued that not everyone within a group will have all specialized knowledge available to them, and thus the death of certain members of a group can effectively destroy that knowledge. I will describe the history of the post-Contact Catawba and indicate how TEK may have been lost and discarded. In later chapters I will discuss the archaeological evidence for foodway changes and loss of TEK during this time period.

The arrival of Europeans in the Carolina Piedmont during the 16th century heralded the beginning of centuries of violence and chaos that drastically changed the political and social structures of Native American groups. During the first 150 years or so of contact, European diseases, raids by Indian slave traders, and fighting with European colonists caused many piedmont groups to abandon their ancestral homelands and take refuge with other stronger tribes such as the Kadapau, Esaw, Sugaree, and Wateree (Davis and Riggs 2004). The refugees that settled along the Catawba River in upper South Carolina, while they continued to maintain their separate group identities, worked together to establish themselves as a respected military force. They leveraged their position as auxiliary troops for the English colonies to retain control over their lands and to get supplies from the colonists. Following the devastating 1759 smallpox epidemic, the distinct tribal identities collapsed and the remaining people coalesced into the unified Catawba Nation. Despite finding new success in the colonial market as itinerant potters, the nation continued to decline during the decades following the coalescence due to disease and chronic alcohol abuse. Many predicted that the nation would soon disappear entirely. Due to the persistence and strength of the Catawba people the nation survived and ultimately flourished, continuing to live in their ancestral homeland and to create their traditional pottery.

While the Catawba showed great resilience, their traditional lifeways were certainly affected by the tumultuous colonial period. Table 2.1 summarizes events that would have

affected TEK loss and groups them into three broad time periods: the shatter zone (A.D. 1540-1715), coalescence (A.D. 1715-1800), and post-coalescence (A.D. 1800-present). Many of the processes listed under the different time periods continued outside of the given time range, but I have attempted to base my dates on when the process had the greatest impact. For example, the deerskin trade continued on some level throughout most of the colonial interactions, but took on an increased importance after the end of the Indian slave trade, and declined in importance at the end of the eighteenth century after deer populations had dropped significantly. In the following pages I will illustrate how TEK loss differed in these three broad time periods, and how the events and processes that took place in those time periods affected it.

The Shatter Zone (A.D. 1540-1715)

The Mississippian shatter zone is a conceptual framework used to understand the collapse of the Mississippian world and the incorporation of indigenous peoples into the European capitalist economy. Ethridge (2009: 2) defined the term as:

> A large region of instability in eastern North America that existed from the late sixteenth through the early eighteenth centuries and was created by the combined conditions of the structural instability of the Mississippian world and the inability of Native polities to withstand the full force of colonialism; the introduction of Old World pathogens and the subsequent serial disease episodes and loss of life; the inauguration of a nascent capitalist economic system by Europeans through a commercial trade in animal skins and especially in Indian slaves, whom other Indians procured and sold to European buyers; and the intensification and spread of violence and warfare through the Indian slave trade and particularly through the emergence of militaristic Native slaving societies who held control of the European trade.

The end of the Mississippian shatter zone is defined by the 1729 Natchez Revolt, which marked the collapse of the final Mississippian chiefdom and the beginning of many modern Indian nations. The shatter zone framework is also useful for describing the prelude to the Catawba coalescence, though these processes operated differently in the Carolina Piedmont.

Table 2.1 Loss of Traditional Ecological Knowledge Among the Catawba Over Time.

Event/Process	Time Period/Dates	Effect on Catawba Women and TEK	Effect on Catawba Men and TEK	Effect on Catawba Children and TEK	TEK Loss
Shatter Zone	*A.D. 1540-1715*	*Significant initial loss of knowledge, TEK less likely to be transmitted and maintained as large portion of population died or was forced to move*			
Indian Slave Trade	~1600-1715	Death of elder mentors, adult women killed/enslaved	Death of elder mentors, adult men killed	Death of mentors, children killed and enslaved	Permanently removed group members
Disease in the Carolina Piedmont	~1650-1715	Death of elders and adult women, low fertility rates	Death of elders and adult men	Loss of mentors, death of children	Permanently removed group members
Movement of Tribes in the Carolina Piedmont	~1650-1715	Removed from context in which gathering/growing knowledge was learned	Removed from context in which hunting knowledge was learned	Loss of mentors familiar with the local ecological context	Removed group from local ecological context
Coalescence	*A.D. 1715-1800*	*Men's transmission of TEK disrupted through ethnic soldiering and deer skin trade, loss of local contexts of knowledge and opportunities to maintain knowledge*			
Coalescence of Refugee Tribes	~1700-1759	Removed from context in which gathering/growing knowledge was learned	Removed from context in which hunting knowledge was learned	Loss of mentors familiar with the local ecological context	Removed group from local ecological context
Catawba Ethnic Soldiering	~1715-1800		Adult males frequently gone to fight	Loss of adult male mentors	Temporarily removed group members
Deer Skin Trade	~1715-1800		Adult males frequently gone from group for long hunts	Loss of adult male mentors	Temporarily removed group members
Disease among the Catawba Nation	Various unknown epidemics 1759 Smallpox Epidemic 1775 Smallpox Epidemic	Death of elders and adult women, low fertility rates	Death of elders and adult men	Loss of mentors, death of children	Permanently removed group members

Table 2.1 Loss of Traditional Ecological Knowledge Among the Catawba Over Time (continued).

Event/Process	Time Period/Dates	Effect on Catawba Women and TEK	Effect on Catawba Men and TEK	Effect on Catawba Children and TEK	TEK Loss
Movement of Catawba Nation	1759-1760 Move to Pine Tree Hill, South Carolina 1760 Treaty of Pine Tree Hill sets up Catawba reservation on 15 square miles of land 1780 Move to Virginia	Removed from context in which gathering/growing knowledge was learned	Removed from context in which hunting knowledge was learned	Loss of mentors familiar with the local ecological context	Removed group from local ecological context
Leasing of Catawba Reservation Land	Post-1763	Smaller plots of land to farm, limited access to gathered resources	Limited access to hunted resources	Limited access to ecological resources, loss of opportunity to learn those sources	Removed group from local ecological context
Post-Coalescence	*A.D. 1800-present*	*Discard of women's farming and gathering TEK continues as pottery trade becomes more valuable*			
Itinerant Potter Trade	~1750 to present	Temporary removal from group, traveling to sell wares		Higher value placed on potting skill set	Temporarily removed group members
Movement of Catawba Nation	1840 Removal to Cherokee Homeland Post 1880 Migration following adoption of Mormonism	Removed from context in which gathering/growing knowledge was learned	Removed from context in which hunting knowledge was learned	Loss of mentors familiar with the local ecological context	Removed group from local ecological context
Disease on the Catawba Reservation	1918 Influenza Epidemic 1928 Measles Epidemic	Death of elders and adult women, low fertility rates	Death of elders and adult men	Loss of mentors, death of children	Permanently removed group members

Beck (2009) outlined the ways in which the shattering of the Carolina Piedmont chiefdoms of Cofitachequi, Guatari, and Joara differed from those of the Mississippian world. While disease is often cited as the first destabilizing factor, the archaeological evidence does not suggest increased mortality in the Carolina Piedmont until the late seventeenth century and it has been argued that the social geography of the south was not conducive to widespread epidemics before the late seventeenth century (Davis et al. 2014). Beck argued that the first epidemics in the Carolina Piedmont were likely no earlier than 1675, with the first major smallpox epidemic reported in 1696. High mortality rates during this time period in the piedmont may also be attributed to the raids conducted by the Westo and Occaneechi, two of the early militaristic Native slaving societies. While Native American groups did take slaves before the arrival of Europeans, it was not a large-scale process. The slave trade intensified during the seventeenth century as demand for slaves (mostly women and children) and availability of firearms increased (Fitts and Heath 2009). Elders and young children were frequently killed in raids because they could not be sold, and adult males were killed as warriors in large numbers. Sometimes slaves were incorporated into the raiding tribe to replace members lost to disease and warfare, but often they were sold and sent further north or to English plantations in other countries. The Tuscarora War of 1712 and the Yamassee War of 1715 effectively ended the slave trade, but by that point the significant chaos and turmoil had forced many groups to move away from their native homelands and ally with stronger tribes.

I have labeled the shatter zone as going from 1540-1715, marking its end with the demise of the Indian slave trade because this signaled a shift in how native groups fit into the world economic system. The end of the Carolina Piedmont shatter zone marked the end of chiefdoms and the beginning of nations as the primary political entity, and changed the economic activities

important to different tribes. Without the Indian slave trade, the groups that would become the Catawba Nation engaged heavily in the deer skin trade and ethnic soldiering as their primary interaction with the capitalist economic system. It is difficult to track exactly how the shatter zone affected later Catawba TEK, because these groups were still spread throughout the piedmont. High mortality rates for adult males due to disease and the Indian slave trade would have permanently removed mentors who would have passed on hunting knowledge to male children. High mortality rates for adult females and children due to disease, and removal of adult females and children from their tribes as part of the slave trade would have also affected the intergenerational transfer of gathering and farming knowledge.

Additionally, the movement of tribes throughout the Carolina Piedmont would have removed people from the local ecological contexts in which they learned hunting, gathering, and farming TEK. Movement outside of local contexts is cited by ethnographic cases of TEK loss as an important factor in disrupting the transmission and maintenance of that knowledge (McCarter and Gavin 2014; Setalaphruk and Price 2007). While the refugee tribes stayed in the Carolina Piedmont and thus did not move to radically different ecological zones, intimate knowledge of where the first berries ripened, where the best nut groves were located, and where there were game trails and fishing holes would have been lost (Binford 1980; Gremillion 2004). The specific knowledge of local resource patches that people would have mapped onto their homeland could not easily be transposed to a new area. The shatter zone period set the stage for Catawba coalescence, which brought about new factors affecting the maintenance of TEK.

Coalescence (A.D. 1715-1800)

I marked the beginning of the coalescent period based on the end of the Indian slave trade because this generated a significant shift in the Catawba economy, as participation in the deer

skin trade and ethnic soldiering became the new ways of participating in the capitalist economic system (Ethridge 2009). In the early eighteenth century, a series of treaties were written guaranteeing specific prices for deerskins and regulating the behavior of colonial traders (Mancall et al. 2005). This period also brought traders into the backcountry with European goods including guns and alcohol. Following a brief decline in the deerskin trade during the Yamassee War, exports of deerskins increased significantly throughout the 1700s. In 1748 alone, approximately 140,000 pounds of deerskins were exported (Mancall et al. 2005: 310). This practice proved not to be sustainable over the long term though, and by the end of the eighteenth century it was no longer a major economic activity of the Catawba. Nevertheless, while the trade was going on it would have required adult men to leave their families for long periods of time as they traveled great distances to hunt deer and then sell the skins to traders. This would have removed adult male mentors from the group temporarily, potentially eroding intergenerational transmission of traditional ecological knowledge about hunting (although boys may have joined these hunting groups as they transitioned from childhood to adolescence). Plane (2004) also noted that participation in the deerskin trade promoted the incorporation of European commodities into Indian lifeways, transforming native technologies and related knowledge.

The practice of ethnic soldiering also temporarily and permanently removed adult males from the group, as warriors traveled and died fighting in wars. The expanding colonial empires used ethnic soldiers as auxiliary combat troops and internal police to control subversive or enslaved populations (Ferguson and Whitehead 1999). The Catawba served as a buffer between English colonists and other Indian groups, and as a deterrent against the escape of African slaves (Fitts and Heath 2009). Bauer (2011) frames the Catawbas' military alliances with the Europeans as an adaptive response to European colonial abuses. She described the Catawbas' renowned

military prowess and courage, and how they used those strengths as political leverage when negotiating with European colonists for preferential trade agreements. Through their participation in the Tuscarora (1711) and Yamassee (1715-1718) Wars, the Catawbas used their fighting skills "to promote the tribe's political and economic autonomy" (Bauer 2011: 75). During the Yamassee War the Catawba initially allied themselves with the Yamassee coalition, but left to join forces with the British colonists after suffering massive losses of men, women, and children at Goose Creek in 1715 (Fitts and Heath 2009).

The Catawba continued this warrior tradition by participating in the Seven Years War (1756-1763), but when the warriors returned home in 1759 they brought smallpox with them. The following epidemic killed over half of the Catawba Nation (McReynolds 2009). The Catawba later allied themselves with the American revolutionaries during the Revolutionary War, guaranteeing their good standing in the newly independent United States of America. According to historian Thomas Blumer, all sixteen of the nation's able-bodied men served in the American Civil War, and only five of those men returned (Augusté 2009). While the practice of ethnic soldiering has no solid official ending, there were less than 50 warriors in the Catawba Nation by 1826, suggesting an effective end to this economic strategy (McReynolds 2009).

The frequent movement of families and recurring epidemics throughout the coalescent period would have hindered the maintenance and transmission of traditional ecological knowledge by removing people from known ecological contexts and removing mentors from the group. Native recipe books and current native writers emphasize the importance of having someone show you where good plants for gathering can be found, which plants can be eaten, and how to process them (Fritz et al. 2001; Mankiller 2011; Mankiller and Wallis 1993; Mullin Sherard 1975; Ulmer and Beck 1951). Without the familiarity with the land and the instructions,

both explicit and learned through practice, of those who hold TEK, gathering would be unproductive at best and possibly fatal if poisonous plants are consumed. The coalescent period started with refugees from tribal groups throughout the Carolina Piedmont joining the relatively strong Catawbas and moving to their tribal homeland. This migration would have produced an initial disconnect from the land and possibly contestation over gathering and hunting grounds as local families had claim to such resources (McReynolds 2009). Following the 1759 smallpox epidemic, the Catawbas moved to Pine Tree Hill, South Carolina, for a year before returning to their Nation Fords homeland. They were forced to move again in 1780 by British troops, staying in Virginia for a year before returning home again. During the eighteenth century there were also multiple epidemics causing many people to die (Reynolds 2009). The 1759 epidemic caused the greatest loss of life, and its devastating effects are often cited as the event that solidified Catawba unification. Losing so many people, along with the frequent removals from local contexts onto which resource patches had been mapped, would have eroded passage of traditional ecological knowledge.

While ethnographic cases focused on the loss of wild plant knowledge, there is reason to believe that knowledge for growing plants would have also eroded during the colonial period (McCarter and Gavin 2014; Setalaphruk and Price 2007). Numerous sources suggest that growing crops and gathering plant foods in enough quantities to provide daily meals was an unreliable option for the Catawba as they lost land and people (Augusté 2009: 155; Liston 1797). When Calvin Jones described his 1815 visit to New Town, located one mile away from Old Town, he wrote about the scarcity of corn and children dying from too much whiskey and too little bread (Jones 1815). Governor James Glen wrote about needing to send food to the Catawba following a drought in the mid-eighteenth century, stating that “"A bad Crop was not so great a

Calamity to them in former Times… near Neighborhood of the English, they say, drives away their Game; and deprives them of the means of subsisting on such Emergencies" (Lipscomb 1989). Mancall et al. (2005) noted that accounts from colonial officials suggest that reliable food sources were increasingly lost throughout the eighteenth century. In 1755 alone, the colony of South Carolina paid for 500 pounds of corn for the Catawba and reimbursed numerous colonists for providing Indians with beef (Mancall et al. 2005: 309). Efficiency and productivity of agricultural and cultivated resources may have diminished through loss of traditional knowledge. There are better and worse conditions and techniques for growing and tending plants, and the nuances of that knowledge likely suffered in the colonial instability.

Peach trees are frequently described as very easy to grow, and were adopted into Native foodways very quickly after Contact due in part to ease of growing as well as similarity to already existing Native resources (Chandler 1928; Gremillion 1993; Talbert and Murneek 1939). Nevertheless, there are better and worse places and techniques for growing peaches. Frank Waugh (1913) wrote a book intended for industrial peach orchard growers, and included a chapter for home growers. He provided instructions for choosing the best land to plant trees, how to properly fertilize them, prune them, and keep away pests. He concluded that "good peaches and plenty of them can be grown by anyone who is physically and morally capable of garden work of any sort, all that is required being reasonably good garden conditions, reasonably sound horticultural instincts and reasonably decent care" (1913: 184). Good garden conditions and good care may not have been options for people relegated to small tracts of land and frequent needs to travel. If adults were not able to tend crops consistently, it might not have been worth their time to try to grow them at all.

Corn was a much longer standing crop and likely had more extensive TEK associated

with it, yet ethnohistorical accounts clearly suggest that the colonial presence substantially influenced farming of corn. Growing and processing corn was a labor-intensive process that benefitted both from specialized knowledge and community organization. Scarry (2008: 394-395) outlined the general process of farming corn. In late winter or early spring, men would create new fields by girdling trees and burning stumps and underbrush, or prepare old fields by burning weeds. After the fields had been cleared, women were responsible for preparing the fields by using digging sticks and hoes to create hills at regularly spaced intervals. Women then planted several grains of corn in each hill, sometimes planting squash and beans with the corn as part of an intercropping system. When crops sprouted, women weeded the fields, thinned the plants, and hoed up soil around the plants to promote root development (Swanton 1946:306–308, 710–717; Wenhold 1936:13). When the corn ripened, women (and sometimes men) harvested it and prepared it for storage. Specific knowledge of when to start planting, how much plants needed to be thinned to thrive, and other steps throughout the corn growing process would have been at risk as elderly and adult females died from disease or warfare without passing on that knowledge. While the crop could still be grown, it might not yield as much or be able to make a large contribution to the overall diet.

A family of five to six could farm plots ranging from a quarter hectare to two hectares, depending on how many adult women were in the household. Yields varied depending on soil and other factors, but were generally sufficient to provide 25% to 50% of a family's caloric needs (Baden and Beekman 2001; Scarry 2008; Schroeder 1999). The absence of men for clearing fields due to the deerskin trade and warfare would have been one factor affecting the ability to farm. Mortality from epidemic disease would have been another issue, particularly as the population "a shortage of prime adults relative to children and post-prime adults" following

episodes of disease (McReynolds 2009: 49). Fitts' (2014) analysis of the spatial patterning of corn kernel remains at Ayers Town suggested a change in corn farming or processing practices. Changes in the production of corn may have accompanied loss of knowledge and of labor. VanDerwarker et al. (2013), in their overview of Cherokee foodways from A.D. 1300-1783, argued that a decline in corn production among the Cherokee during the historic period along with increased foraging and resource diversification was a strategy of risk mitigation that prioritized resources with more immediate rewards. Fruits, for instance, require less investment of labor to grow and process. Polyvalence, the combining of several types of productive economic activities, is another strategy that they mention for preventing and responding to loss (VanDerwarker et al. 2013: 73). Since an initial review of the botanical remains from Catawba historic sites suggest a decrease rather than an increase in resource diversification, polyvalence may have been the Catawbas' preferred strategy for coping with the uncertainty in the food systems caused by colonial upheavals (Fitts 2014).

Henrietta Liston's (1797) recorded in a description of her visit to a Catawba town that people there grew corn only for travel, suggesting that the Catawba might have been relying more on imports of food purchased or traded. She described some of the foods being used in the village, including wild turkey and deer being cooked for breakfast in pots on hearths. Liston stated:

> The only cultivation we saw was a small quantity of Indian corn in the vicinity of the Town, cultivated I am told, by the Women, & this is rather for traveling with (when an Indian sets out on a journey the flour of Indian Corn in a bag & pot to boil it in is all his provision) than to use as bread. [Liston 1797: 27]

Several Cherokee sources (Keys 1966; Ulmer and Beck 1951) describe this practice among the Cherokee: travelers carried corn meal and ate it dry or mixed with molasses, honey, sugar, or water (Ulmer and Beck 1951). Wahnenauhi, a Cherokee woman whose English name was Lucy

L. Keys, described this mixture as remarkably refreshing, stating that upon consuming this concoction “"the requirements of Nature are satisfied - and the traveler goes on his way as much refreshed as when he began his journey in the early morning" (Keys 1966: 192).

Loss of knowledge and loss of land were both factors in worsening agricultural yields. Foster (2003) modeled field use for the eighteenth century Creek town of Cussetah. He argues that the townspeople practiced a form of swidden cultivation; rotating field plots every four years and allowing eight years before fallowed plots were replanted. He concluded that declining fertility would require new land for new fields after thirty years (Scarry and Scarry 2005). Mt. Pleasant and Burt (2010) re-assessed Foster’s model through field experiments and historical literature on traditional Iroquoian cropping systems. They concluded that Foster’s study had overestimated the impact on soils and frequency of need for new fields in traditional corn agriculture. Mt. Pleasant and Burt also addressed Baden and Beekman’s (2001) and Schroeder’s (1999) studies of corn productivity and concluded that those studies had underestimated corn productivity. The impact of corn agriculture on land fertility and the subsequent impact on harvest yields remains a complicated question and may have varied depending on the ecological zone. Nevertheless, loss of land available for farming would have likely had an impact on the ability of the Catawba to produce their own food.

Jamie Civitello (2005) also addressed the problem of declining land fertility and loss of land in her botanical analysis of Spratt’s Bottom (c. 1700-1759), one of the Catawba towns near Old Nations Ford. Civitello’s analysis focused on anthropogenic landscapes, and she suggested that coalescence of Catawbas and refugee groups on increasingly smaller sections of land would have meant that agricultural land was left fallow for shorter periods of time (Civitello 2005: 101). This would have been a problem for agricultural production, and also for gathering wild

resources as mature forests used for nuts and timber had less time and space to grow. With the 1760 Treaty of Pine Tree Hill, the Catawba Nation relinquished its claim to a large territory in exchange for a guaranteed title to the 15-square-mile tract that they considered their core homeland (Davis and Riggs 2004). Furthermore, by the late eighteenth century the Catawbas had begun to lease their land to white planters for rent payments, further limiting their ability to rotate fields to contend with loss of soil nutrients. Rev. Thomas Coke, visiting in 1792, remarked that:

> They possess a quantity of land, fifteen miles square on the river Catawba. A very small part of this land they cultivate themselves: a much larger part they let out in long leases to the white people. [Coke 1792: 11-12]

Colonial encroachment onto Catawba territory would have resulted in less land to choose from for optimal growing and collecting. Faced with the difficult task of producing food in a limited space, the Catawba may have opted not to teach TEK for farming and gathering when it would not have been a productive option.

Post Coalescence (A.D. 1800-present)

The smallpox epidemic of 1759 is generally given as the time that the Catawba Nation became unified, but I have chosen to discuss the Catawba after coalescence starting around the year 1800 because it marks a significant change in economic and social systems. As discussed above, Catawba population was around its lowest point at this time, and Europeans were increasingly occupying Catawba lands (Plane 2010; McReynolds 2009). The low number of Catawba warriors and the low deer population meant that ethnic soldiering and the deerskin trade were no longer viable economic options, so the Catawba focused on different strategies: leasing reservation land to white settlers, Catawba men working as slave catchers for plantation owners, and Catawba women creating and selling pottery (Mancall et al. 2005; Plane 2010).

Ethnohistorical accounts suggest that the Catawba were only minimally engaged in agriculture after the 1700s, and Plane (2010: 47) noted, "Obtaining food from commercial activity rather than from primary production is typical for itinerant groups." Based on preliminary reports of botanical remains recovered from Nassaw, Old Town, and New Town, Plane argued that the Catawba were no longer growing the majority of their food.

N.N. Augusté (2009) described the crisis and transition experienced by the Catawba during the United States Civil War. Augusté contended that the Catawba nation lost almost all of its able-bodied men during the war, leaving women to support their families through their pottery. Although the Catawba pottery trade had started at least 60 years before the Civil War, it took on a new importance in the nation after the war. Augusté stated that in this time, women made the active choice not to focus on producing their own food on their limited reservation land, rather: "Catawba Indian women knew that at that time the only profitable resource that could be extracted from the infertile land was its clay: plentiful and marketable for the exchange of food, clothing, and other goods" (2009: 149). Hudson (1970: 75-76) quoted one Catawba child as saying about the pottery trade "That's the way we got our clothes and part of our groceries. There was never any farming to amount to anything." If, as in the case of the village children in northeast Thailand, the Catawba children valued traditional ecological knowledge based on desirability of foods and market value, it is understandable that those children may not have learned as much about plants in favor of learning more marketable trades. Augusté wrote in depth about genealogies of Catawba potters who passed on their craft to their children by including them in the work of pottery making. She illustrated through the cases of many informants the intergenerational transfer of knowledge of the pottery craft: grandmothers and mothers teaching their daughters and granddaughters how to produce goods with which they

could provide for their families. In addition to producing the pots, women were traveling to sell them. Augusté (2009) recounted stories of Catawba women living in the nineteenth century who walked as much as seventy miles away from home to sell pottery, often in exchange for corn meal or flour, which would have further affected the opportunities for children to learn TEK from adult mentors.

It is beyond the scope of this paper to recount the full history of the Catawba Nation since 1800, so I will only add that disease and migration continued to be factors effecting the Catawba population and the transmission and maintenance of TEK. While no major epidemics were recorded among the Catawba throughout the nineteenth century, the nation lost many people during the 1918 influenza epidemic and the 1928 measles epidemic (McReynolds 2009). Population had grown slowly since the lowest point in the mid-nineteenth century, and began to grow rapidly after the 1950s. There were also two major migrations post-1800 (McReynolds 2009). In 1840, almost the entire nation left their reservation to move in with the Eastern Cherokees in North Carolina. By 1848, most of the nation had returned to their South Carolina reservation or had moved to join the Choctaws in Arkansas. During the 1880s many Catawbas converted to Mormonism and left the reservation to move to Utah, Colorado, New Mexico, and other areas of South Carolina more tolerant of Mormons. Currently, many members of the Catawba Nation live on their reservation in Rock Hill, South Carolina.

Erosion of TEK does not necessarily mean that the Catawba lost all of their traditional plant knowledge. Speck (1944) described Catawba botanical knowledge in the early 20th century related to plants that are used in curative practices. Catawba herb gatherers found their plants in patches of forest within the Catawba reservation, which they showed to Speck. The Catawba language plant names showed significant influence from local English plant vernacular, though

Speck thought that this language change did not imply that the Catawba were also using English notions of plant use, rather that they were just using more familiar words. Speck's study of Catawba plant use relied heavily on his female informants, particularly Margaret Brown and Sally Gordon. He generated an extensive list of botanicals with curative properties used by the Catawba, along with the Catawba word for the plant. Persimmon bark, peach, and even corn are recorded as plants that can be used for healing practices.

Speck's (1913) records of Catawba folklore communicated to him by Susannah Owl, a Catawba woman who was a skilled potter, further demonstrate the continuity of Catawba traditional ecological knowledge in some form (Merrell 1983). Susannah Owl tells several stories that involve animals gathering and preparing food for meals. In one story, Bear prepares a meal for Rabbit using grease he produced by sticking an awl in his own heel (Speck 1913: 320). When Rabbit attempts to reciprocate this gesture, no grease came out and the foot pain killed him. In another story, Opossum tricks Deer into killing himself by running headfirst into a persimmon tree. Though Susannah Owl had to use the English word for opossum, not knowing the word in Catawba, she otherwise remembered native stories and native words about food. While there are issues with Speck's ethnographic work and unacknowledged biases from the informants he spoke with (for discussion of those problems see Hicks 1965; Merrell 1983), his work does represent some continuation of Catawba TEK. Some among the nation still preserved knowledge of plant gathering and use.

CHAPTER 3: BACKGROUND TO THE CATAWBA PROJECT

The sites excavated as part of the Catawba Project span an important period of time in the development of the modern Catawba Nation, as the diverse polyethnic community completed coalescence and began to consider themselves unified under the Catawba identity (see Figure 1.1 for map of sites). This history is one punctuated with diseases, war, migrations, and loss of land resulting in rapid and extreme changes in cultural and sociopolitical landscapes (see Davis and Riggs 2004 for a more extended discussion of these events). The Kadapau (also known as the Esaus or Nassaus), along with the Sugaree and Wateree tribes, were the primary native power of the piedmont interior and absorbed numerous refugee groups as European-introduced diseases, Iroquois raiding, and Indian colonial wars wreaked havoc upon these populations. The ethnically diverse Catawba Nation that emerged from this amalgamation used its' military prowess to leverage political power in the colonies (Davis and Riggs 2004; Riggs et al. 2006). The Seven Years War (or French and Indian War) mobilized Catawba warriors as part of their alliance with English forces, but ended with warriors returning from Quebec bringing smallpox into the Nation, and more than half of the Catawbas and their allies died. This smallpox epidemic in 1759 directly precedes the establishment of the Old Town settlement in the Late Colonial period (1760-1775) and marks the completion of Catawba coalescence. Davis and Riggs refer to the Late Colonial period as "a time of consolidation and decline for the Catawba. The distinct identities of the multiple tribal groups that formed the nation collapsed and the survivors, now known simply as Catawbas, moved downriver in 1760 to Pine Tree Hill" (2004: 3).

After assisting the English in a war against the Cherokee from 1760 to 1761, the Catawba moved back upriver to the Waxhaw Old Fields (Davis and Riggs 2004). The Late Colonial Period ended in 1776 with the start of the Revolutionary War. During the Revolutionary period (1776-1781) the Catawbas allied with the Americans and provided warriors and sanctuary for American forces. English troops under the command of General Cornwallis forced the Catawbas to retreat to Virginia, during which time Old Town was abandoned and possibly burned by the English forces. In the post-Revolutionary Federal period (1781-1820), during which New Town was established, the remaining members of the Catawba Nation returned to the Waxhaw Old Fields and survived through subsistence farming, hunting, and money made through pottery trade and land rents. While the steady decline in the Catawba population once led people to believe that the group would disappear entirely, they underwent resurgence in the nineteenth century and are now a federally recognized tribe in South Carolina with over 2,000 members.

Members of the Catawba Nation occupied the Old Town site, located near current day Rock Hill, South Carolina, for two consecutive periods over the course of about 40 years. The nearby New Town site was occupied for 20 years following the end of the Old Town occupation. Following the devastating 1759 A.D. smallpox epidemic, members of the nation briefly moved and regrouped near present day Camden, South Carolina, then moved back to their territory and established two new towns – one of which was Old Town (Riggs 2010). People lived there from about 1762 to 1780. During the American Revolution, in which the Catawba allied with the American colonists, the British came through South Carolina and likely burned the Old Town settlement. The Catawba fled to Virginia where they lived for a year before returning to rebuild at Old Town where they lived from about 1781 to 1800 (Riggs et al. 2006). A new community, New Town, was established in the uplands several kilometers above Old Town during the 1790s

and was occupied until the death of Sally New River in 1820. I analyzed plant remains from these two sites and compared my results with the data from three other Catawba sites (Nassaw-Weyapee, Charraw Town, and Ayers Town) to examine how plant use changed during this critical time period.

The Old Town Site (SoC634)

The Old Town site is located along the east side of the Catawba River in Lancaster County, South Carolina, near present day Rock Hill. Old Town is a dispersed village of at least five cabin loci named for the adjacent stream "Old Town Branch." It is located along terrace remnants that flank the Catawba River valley known as Waxhaw Old Fields (Davis and Riggs 2004). Old Town was one of two villages formed near Twelve Mile Creek in 1762 following the Catawbas' return from Pine Tree Hill, at which time the Catawbas numbered approximately 300 people following a significant demographic decline.

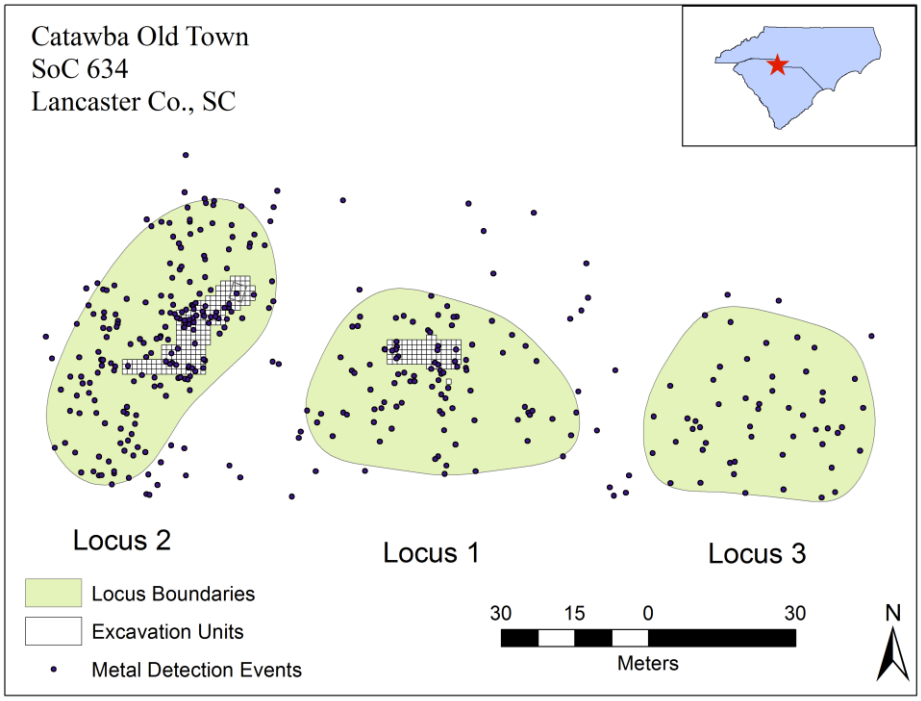

Figure 3.1 Map of Old Town Site Loci (courtesy of David Cranford).

Five loci were identified by metal detection survey, of which two have been excavated (Figure 3.1). During the 2003 field season, UNC Chapel Hill archaeological field school students under the supervision of Dr. R.P. Steve Davis and Dr. Brett Riggs uncovered a number of features in Locus 1 (Figure 3.2). During the 2009 field season, students excavated Locus 2 features (Figure 3.3). For the 2014 field season, further excavations were done at Locus 2 but the results of that field season are not included in this report. A third identified locus has yet to be excavated. Features from these excavations could be assigned to two consecutive occupations, Old Town 1 and Old Town 2, but these designations do not correspond with the locus designations. The temporal hiatus matches the 1780 destruction of Catawba settlements by Lord Cornwallis's army during the Revolutionary War (Riggs 2010). Figures 3 and 4 show the two excavated loci and the temporal affiliation of the various features where they could be determined.

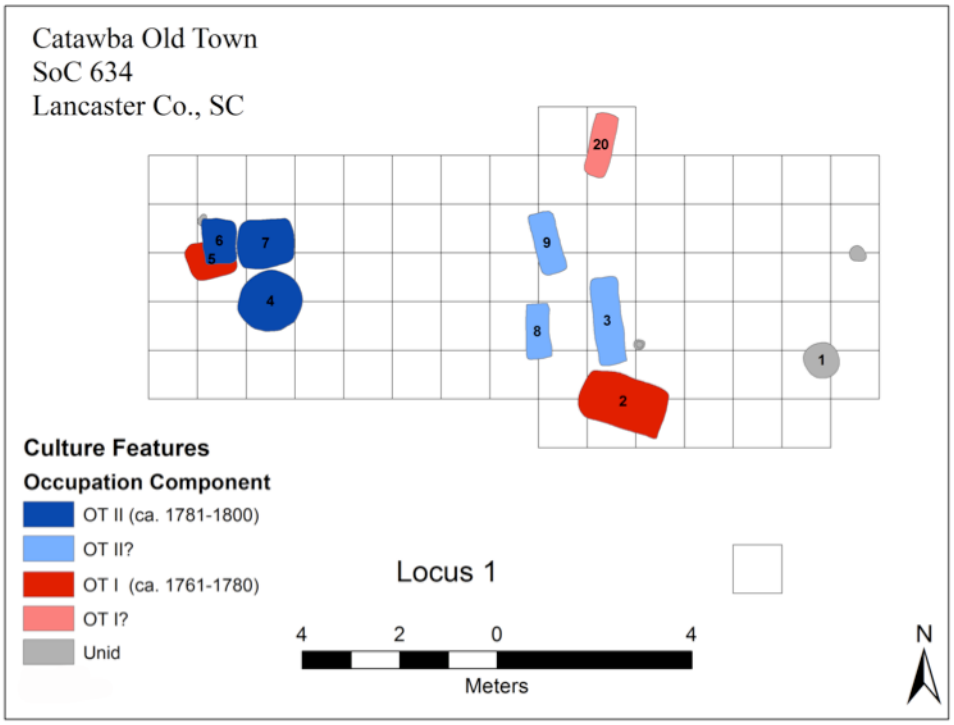

Figure 3.2 Old Town Locus 1 Excavation Map (courtesy of David Cranford).

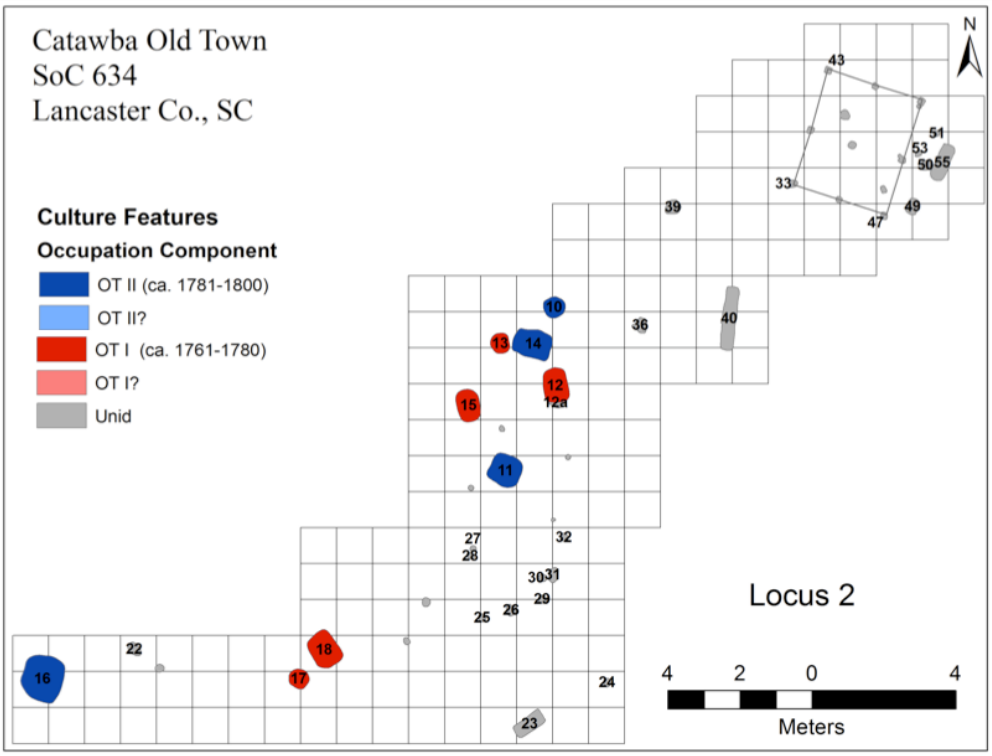

Figure 3.3 Old Town Locus 2 Excavation Map (courtesy of David Cranford).

The New Town Site (SoC632 and SoC635)

The New Town site is located on an upland ridge overlooking the Catawba valley in northern Lancaster County (Davis et al. 2014). Metal detector survey conducted by UNC archaeologists between 2003 and 2005 identified seven cabin loci, with an eighth household identified during a 2012 visit to the site (Figure 3.4). These households were initially considered to be three separate neighborhoods, a northern neighborhood, a central neighborhood, and a southern one, and were given two separate site numbers (McReynolds Shebalin 2011). Excavations were done at six of the cabin sites over the course of three seasons in 2003, 2004, and 2005, uncovering features including cellar pits, borrow pits, trash dumps, and stick-and-clay chimney bases and hearths. Only one house had a sub-floor cellar, suggesting that the site occupants no longer needed these types of facilities. Due to the relative dearth of pit features,

comparatively little soil was waterscreened or floated over the course of excavations. Cabin Locus 4 was one of the most extensively excavated areas of the site, and has been posited as the residence of Sally New River. The artifact assemblage from the site yielded many pieces of western equipment, but contained significantly less firearms and ammunition, likely reflecting the declining importance of hunting and warfare in the Catawba economy. Potters' tools and Catawba-made earthenwares attest to the importance of the ceramics industry at the site. Following the death of Sally New River, the matriarch of New Town, in 1820, the families who had lived there moved across the river to the location of the present-day Catawba reservation.

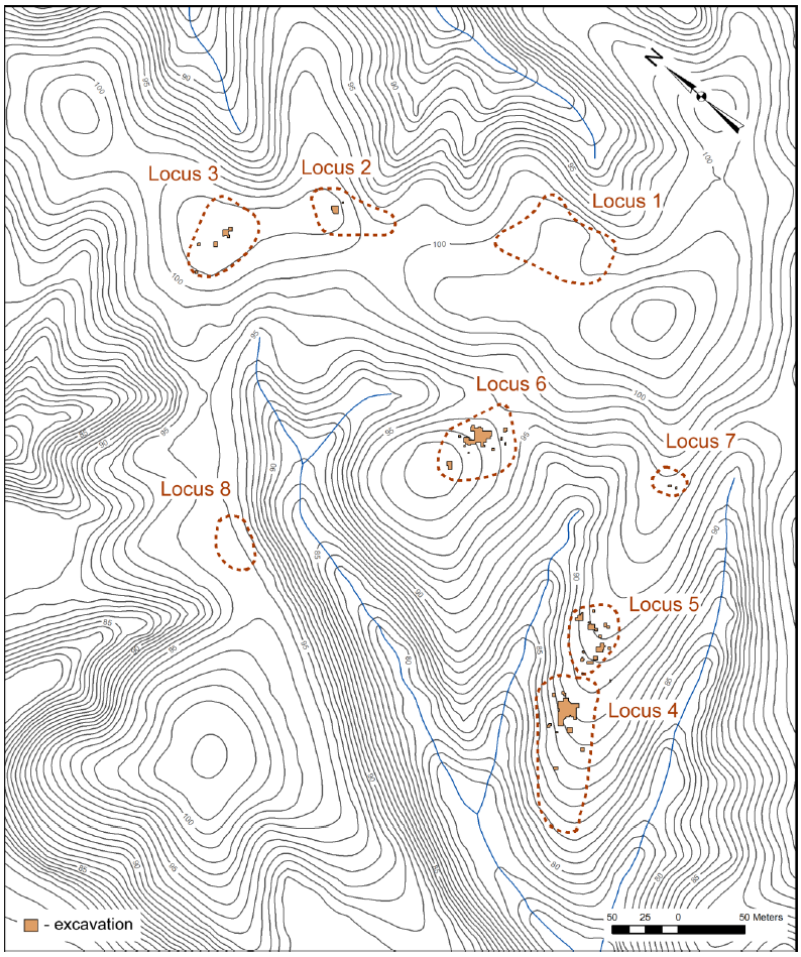

Figure 3.4 Map of New Town showing eight cabin loci located through metal detection survey, and areas excavated. Loci 1, 2, 3, 6, and 7 are designated SoC632, and the remaining three loci are site SoC635.

Other Catawba Project Sites: Nassaw-Weyapee, Charraw Town, and Ayers Town

The history of excavations at Nassaw-Weyapee, Charraw Town, and Ayers Town and the interpretation of materials from those sites are thoroughly summarized in Davis et al. 2014 and Fitts 2015. Dr. Mary Beth Fitts (2015) did the analysis of botanical remains for the three sites, Dr. Thomas Whyte analyzed faunal remains from Nassaw-Weyapee and Ayers Town, and Ashley Peles analyzed faunal remains from Charraw Town. Nassaw-Weyapee and Charraw Town represent Coalescent Period settlements, and Ayers Town was a post-coalescent site, so these sites are important for showing diachronic change of foodways in the Catawba nation.

Nassaw and Weyapee (38YK434) were paired towns occupied from 1750 A.D. until the 1759 smallpox epidemic (Davis et al. 2014). The site of Nassaw-Weyapee was discovered in 2005 along an upland ridge near Fort Mill, South Carolina, surveyed in 2007, and excavated in 2007 and 2008 by the UNC field school. Metal detector survey indicated the presence of two clusters separated by a small drainage. The larger northern cluster has been interpreted as the remains of Nassaw, and the smaller southern cluster as Weyapee. Excavations at Nassaw and Weyapee uncovered six households at Nassaw and one at Weyapee. Abundant commercially manufactured goods were recovered at Nassaw, reflecting their strategic alliance with Carolina.

Charraw Town (38YK17) (c. 1750-1759) was occupied around the same time as Nassaw-Weyapee, and located within two miles of that settlement (Davis et al. 2014). Members of the Charraw tribe settled Charraw Town, whereas the Esaw tribe likely occupied Nassaw-Weyapee. Though the Catawba people continued to live in different towns based on their tribal affiliation prior to the 1759 Coalescence, they kept their settlements close by so that they could quickly unite if the need arose. The UNC field school excavated the site of Charraw Town in 2011, though they were limited to digging an area along the site's periphery. Several storage pits and

midden areas were excavating, yielding significant amounts of artifacts. Numerous class beads and other European-manufactured artifacts, along with Charraw's location along a trail that branched off of the Great Trading Path, attest to its' strong participation in trade activities.

The Ayers Town site (38YK534) (1781-1800), located 2.3 miles away from Old Town and roughly contemporaneous with Old Town 2, was also excavated as part of the Catawba project under the supervision of Dr. R.P. Steve Davis and Dr. Brett Riggs (Davis et al. 2014). Ayers Town was one of two towns established by the Catawba after their return from Virginia, where they had fled during the Revolutionary War. Initial survey was carried out in 2010, with initial excavations done in the summer of 2010 by UNC field school staff and students. From November 2010 to January 2011, UNC archaeologists completed a final phase of excavation. Excavations produced nearly 200 features. The arrangement of these features suggests that there were 12 structures arranged within five residential complexes.

CHAPTER 4: PALEOETHNOBOTANICAL ANALYSIS

My examination of changes in food use and loss of TEK is based primarily upon analysis of 53 samples from two sites dating between A.D. 1760-1820. All analyzed samples were excavated between 2003 and 2009, and floated by Dr. Mary Beth Fitts at the RLA. Flotation was conducted using a SMAP-type machine that collected heavy fractions in 0.01-in2 (0.25-mm2) mesh and light fractions in approximately 125µ chiffon fabric (Watson 1976). The volume of each sample was measured in a calibrated bucket prior to flotation. Standardization by volume is necessary for quantitative comparison between samples to demonstrate that any differences are not due simply to variation in amount of soil processed. Poppy seed recovery rates for the RLA version of this system have not been established (Wagner 1982), but the identification of tobacco seeds from other samples floated with this system may be a positive measure of its effectiveness (Fitts 2014). Light and heavy fraction material were combined as part of routine processing of flotation samples prior to my involvement with the project.

I used the equipment and comparative collection at the Richard Yarnell Laboratory at the Research Laboratories of Archaeology at UNC Chapel Hill to conduct my analysis. All of the samples analyzed from Old Town and New Town are summarized in table 4.1 by site. I wanted to go through at least one light fraction sample from each zone of every feature, so I started by looking at the flotation log and feature descriptions for both sites to create an initial list of samples to analyze. I intended for this sampling strategy to provide enough data to discuss the spatial distribution of plant remains within the sites; however, due to limited time, there were

Table 4.1. Feature List.

Site	Feature	Locus	Feature Type	Samples Analyzed	Total Liters	Total Weight (g)
Old Town	1	1	circular, basin-shaped pit	2	20	3.96
SoC 634	2	1	sub-rectangular cellar pit	2	20	6.73
	3	1	burial	---	---	---
	4	1	circular storage pit	3	30	6.89
	5	1	sub-rectangular storage pit	1	10	3.69
	6	1	sub-rectangular storage pit	2	20	9.23
	7	1	sub-rectangular cellar pit	4	40	43.00
	8	1	burial	---	---	---
	9	1	burial	---	---	---
	10	2	circular, basin-shaped pit	1	14	19.34
	11	2	sub-rectangular storage pit	1	13	124.60
	12	2	sub-rectangular storage pit	2	18	53.07
	12a	2	Archaic pit	--	--	--
	13	2	circular, basin-shaped pit	--	--	--
	14	2	sub-rectangular cellar pit	10	62	213.48
	15	2	sub-rectangular storage pit	1	10	58.56
	16	2	pit	2	17	34.20
	17	2	circular, basin-shaped pit	--	--	--
	18	2	sub-rectangular cellar pit	6	40	228.00
	19	1	circular pit	1	1	0.96
	20	1	burial	---	---	---
	21	2	cob pit	1	3	17.97
	22	2	refuse-filled tree disturbance	1	---	17.60
New Town	1	2	pit	1	10	18.49
SoC 632	2	2	chimney base	--	--	--
	3	2	shallow pit	--	--	--
	4	3	pit	1	10	1.72
	5	3	pit	--	--	--
	6	3	pit	2	20	23.04
	7	3	pit	4	40	30.56
	8	3	chimney base	--	--	--
	9	3	pit	1	10	9.02
	10	3	pit	1	10	7.87
New Town	8	5	pit	2	20	81.88
SoC 635	9	5	pit	1	10	50.13
Total:				53	438	1063.99

features from Old Town and New Town from which I did not analyze any samples. I prioritized samples from storage and cellar pits, particularly those pits that the excavators described as being large and rich in artifacts. Each sample was size-graded into four fractions: greater than 2 mm, greater than 1.40 mm, greater than 0.71 mm, and pan (any material less than 0.71 mm). I examined each size grade under a low power stereoscopic microscope. I sorted the greater than 2 mm fraction completely into material categories and counted and weighed each category (except for wood, which I only weighed). I identified all botanical items to lowest possible taxonomic category, usually genus, except for wood. I scanned the less than 2 mm fraction under higher magnification; I removed any seeds, corn, nutshell or other unusual botanical material and identified them to the lowest taxonomic level possible. Since there is variation among paleoethnobotanists with regard to the recording of nutshell, corn kernel fragments, and other materials less than 2 mm in size, I recorded these items separately to allow for comparison with other studies. I made identifications with the aid of the laboratory's comparative collection, identification manuals, and through consultation with Dr. C. Margaret Scarry (i.e., Martin and Barkley 1961).

Methods

All the archaeobotanical samples that I analyzed from Old Town were collected and processed as part of the 2003 and 2009 RLA excavations. Additional samples were collected during the 2014 field season, including several smudge pits, but have not been analyzed yet. Flotation samples were taken from all features except for burials, which were left undisturbed. For features excavated in 2003, standard 10-liter samples were taken for flotation from each half of each zone. For features excavated in 2009 and 2014, all soil was collected for flotation from

each half of each zone. All smudge pits were floated in their entirety. For some contexts, charcoal was removed directly from the soil or the materials from fine-screen sieving were later floated. The charcoal from these collection processes is not statistically comparable to that from the flotation samples. However, for Feature 22 only materials floated from fine-screen sieving were taken, so I analyzed and included this sample in tables since it represents the only botanical materials from that context. Materials recovered from smudge pits are excluded from general statistics because they would skew results and do not represent general food use.

I analyzed 39 flotation samples and one sample floated from fine-screen sieving from 16 features that spanned the Old Town 1 and Old Town 2 occupations (features listed by temporal affiliation in table 4.2). This represents 46 % of the total number of flotation samples collected and 84 % of the features for the 2003 and 2009 field seasons (excluding burials). Analyzed samples were floated from 317.5 liters of soil and had a combined total weight of 841.28 grams. The majority of samples came from multi-zoned pits, likely used for storage, refuse disposal, or as smudge pits. Due to limited time I was not able to analyze any samples from Features 13 and 17 (identified as clay processing pits), and there were several features for which I was not able to analyze every zone. The resultant assemblage contains large amounts of wood, with lesser but significant amounts of nutshell, corn (maize), seeds from a variety of starchy, oily, and fleshy-fruited plants, and various other floral remains (I will refer to maize as corn throughout the rest of this paper to keep my terminology consistent with that used in ethnohistorical sources).

Samples from New Town were collected during the 2003, 2004, and 2005 excavations conducted by the RLA. Flotation samples of 10 liters were taken from each half of each zone of every feature, and all soil was floated for any features that contained less than 10 liters of soil. I analyzed 10 flotation samples from Loci 2 and 3 in the northern hamlet (SoC632), and Mary

Beth Fitts previously analyzed three samples from Locus 5 in the southern hamlet (SoC635). Samples came from eight features, representing 36 % of all site features. Analyzed samples were floated from 130 liters of soil and had a combined total weight of 222.71 grams. The majority of samples came from multi-zoned pits, though many of the pits were shallow. The resultant assemblage contains wood and small amounts of nutshell, corn, seeds, and other floral remains.

Table 4.2. Old Town Features by Temporal Affiliation.

Feature #	Locus	# Samples Analyzed	Total Liters	Total Weight (g)
Old Town 1				
2	1	2	20	6.73
5	1	1	10	3.69
12	2	2	18	53.07
13	2	0		
15	2	1	10	58.56
17	2	0		
18	2	6	40	228.00
Old Town 2				
4	1	3	30	6.89
6	1	2	20	9.23
7	1	4	40	43.00
10	2	1	14	19.34
11	2	1	13	124.60
14	2	10	62	213.48
16	2	2	17	34.20
Unaffiliated				
1	1	2	20	3.96
19	1	1	1	0.96
21	2	1	3	17.97
22	2	1	---	17.60
Burials				
3	1	---	---	---
8	1	---	---	---
9	1	---	---	---
20	1	---	---	---
Archaic				
12a	2	0		
Total:		40	317.5	841.28

Results

I have summarized the taxonomic name and common name for all plants recovered at Old Town and New Town in table 4.3 so that I can discuss my results using the common name of plants. Table 4.4 summarizes the botanical material recovered from all features that could confidently be attributed to the Old Town 1 occupation, and table 4.5 summarizes the same information for all Old Town 2 features. Old Town 1 had five features that produced 12 samples, with a mean charcoal density of 3.57 grams per liter and a mean wood charcoal density of 0.94 grams per liter. Old Town 2 had seven features from which I analyzed 23 samples, with a mean charcoal density of 2.31 grams per liter and a mean wood charcoal density of 0.53 grams per liter. This suggests that samples from the two temporal zones were roughly comparable in terms of the amount of charcoal recovered and that neither mean was skewed by the presence of recovered wood (as may have been a concern, given the suggested burning of Old Town 1). There were two features with a combined five zones from Old Town 1 from which I did not analyze any materials, and there are five additional zones from Old Town 2 features that I did not analyze. Thus the difference in number of samples analyzed for the two contexts reflects the difference in number of samples recovered from the two time periods. Old Town 1 had 796 counted remains with an average of 8.12 per liter and Old Town 2 had a total of 1946 counted remains with an average of 9.95 per liter, again suggesting roughly comparable samples.

Features for which temporal affiliation could not be determined are summarized in table 4.6. These remains, for several reasons, cannot be easily compared with the other samples and will mostly be referenced for presence/absence of materials. The sample from Feature 22 was charcoal that was floated from washed materials, so a liter value was not taken when the sample was initially excavated. Feature 21, a smudge pit, almost certainly does not represent normal use

and diet at the site. The remaining two features (Features 1 and 19) contained almost no botanical materials to add to the dataset. Generally this group will be left out of discussion due to the sampling and dating issues.

Table 4.3. Complete List of Taxonomic Names for Identified Plants.

Common Name	Taxonomic Name
Cultigens	
c.f. Bean	*Phaseolus vulgaris*
Corn	*Zea mays*
Squash	*Cucurbita* sp.
Sunflower	*Helianthus annuus*
Nuts	
Acorn	*Quercus* sp.
Hickory	*Carya* sp.
Walnut	*Juglans sp.*
Fruits	
Blueberry	*Vaccinium* sp.
Bramble	*Rubus* sp.
c.f. Crabapple	*Malus* sp.
Grape	*Vitis* sp.
Maypop	*Passiflora incarnata*
Nightshade	*Solanum* sp.
Peach	*Prunus persica*
Persimmon	*Diospyros virginiana*
Strawberry	*Fragaria* sp.
Sumac	*Rhus. sp.*
Wild/Weedy	
Bulrush family	Cyperaceae
Compositae family	Compositae
Copperleaf	*Acalypha gracilens*
Goosefoot	*Chenopodium* sp.
Goose grass	*Eleusine indica*
Grass family	Poaceae
Jimsonweed	*Datura stramonium*
Panic grass	*Panicum* sp.
Pine cone	*Pinus sp.*
Pokeweed	*Phytolaca americana*
Purslane family	*Portulacaceae (c.f. Calandrinia* sp.*)*
Sweet clover	*Melilotus alba*

Materials from Old Town 1 represent a narrow range of plant resources. Both Old Town 1 and Old Town 2 had high ubiquities of corn, with a slightly higher count per liter from Old Town 1. Both contexts had low ratios of kernels to cupules (OT1 = 0.10; OT2 = 0.20) indicating that corn was likely grown and processed on site. Generally people do not expend effort to transport cobs over distances. A high kernel-to-cupule ratio indicates that kernels were present in higher proportions than cupules at the site, suggesting that people grew and/or processed the corn elsewhere, and brought only edible kernels to the site. The enormous amounts of cupules recovered from the unaffiliated cob pit and refuse-filled tree disturbance further support this idea. I found little nutshell in the samples. Old Town 1 only had hickory shell; total nutshell ubiquity was 20 percent, with a count per liter ratio of 0.34. In contrast, Old Town 2 had both hickory and acorn shell, with a ubiquity of 29 percent and count per liter ratio of 1.24.

Old Town 1 had 31 identifiable seeds representing several fruits, berries, and weedy plants. Grape seeds accounted for 35 percent of that group. The grapes found at the site may be fox grapes (*Vitis labrusca* L.) which were noted as being gathered by a number of southeastern Indian groups in mid-to-late summer or autumn and eaten fresh or dried (Core 1967; Talbert and Murneek 1939). Grapes are good food resources because the plants are generally hardy and productive. Henrietta Liston described grapes growing thickly during her 1797 visit to a Catawba village (1797: 25). Old Town 2 had 216 identifiable seeds and almost three times the seed count per liter. That number was driven up in part by the large number of goose grass seeds, which were not carbonized (but were found in a number of lower zones) and likely do not reflect economic activities. Old Town 2 had numerous persimmon, maypops, and grape seeds, along with seeds from various berries. I found small amounts of cucurbit seed fragments and rind from each context, and cucurbit is likely underrepresented due to preservation issues.

Table 4.4. Old Town 1 Botanical Remains.

Feature #	2		5		12		15		18		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Count/L
Nutshell (Total)									33	0.38	33	0.34
Hickory (> 2 mm)									25	0.38	25	0.26
Hickory (< 2 mm)									8		8	0.08
Acorn												
Wood (Total)		0.90		0.53		7.17		14.65		69.16		
Bark					11	0.21					11	0.11
Seed (Total)	1		2		4		7		36		50	0.51
Fruits												
Persimmon							2				2	0.02
Strawberry									2		2	0.02
c.f. Crabapple												0.00
Maypops									3		3	0.03
Peach pit												
Bramble									2		2	0.02
Nightshade												
Blueberry												
Grape									11		11	0.11
Squash												
Squash									4		4	0.04
Wild/Weedy												
Goosefoot												
Bulrush family					1						1	0.01
Jimsonweed												
Goose grass			2								2	0.02
Panic grass									1		1	0.01
Pokeweed	1										1	0.01
Grass family									2		2	0.02

Table 4.4. Old Town 1 Botanical Remains (continued).

Feature #	2		5		12		15		18		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Count/L
Purslane family												
Total Identified Seeds	1		2		1		2		25		31	0.32
Unidentified									10		10	0.10
Unidentifiable					3		5		1		9	0.09
Corn (Total)	2	0.02			44	1.09	24	0.08	484	2.39	554	5.65
Total Kernel Pieces	1	0.01					15	0.05	30	0.31	46	0.47
Kernel (> 2 mm)	1	0.01					5	0.05	17	0.31	23	0.23
Kernel (< 2 mm)							10		13		23	0.23
Total Cupule/Glume	1	0.01			44	1.09	1	0.01	451	1.62	497	5.07
Cupule/glume (> 2 mm)	1	0.01			33	1.08			137	1.32	171	1.74
Cupule/glume (< 2 mm)					11	0.01	1	0.01	314	0.30	326	3.33
Corn cob fragment									2	0.46	2	0.02
Corn glume							6	0.01			6	0.06
Corn embryo							2	0.01	1		3	0.03
Other botanicals (Total)	1	0.11		0.25	41	5.68	42	0.76	64	15.70	148	1.51
Amorphous	1	0.01			31	0.19	30	0.23	42	0.56	104	1.06
Bud (> 2 mm)					1	0.01					1	0.01
Cucurbita rind (> 2 mm)					1	0.01			1	0.01	2	0.02
Cucurbita rind (< 2 mm)												
Fungal matter? (> 2 mm)					8	0.02			17	0.12	25	0.26
Peach pit/nutshell							5	0.01			5	0.05
Pedicel/Peduncle (< 2 mm)							4		2		6	0.06
Uncarbonized (> 2 mm)		0.10		0.25		5.45		0.51		15.00		
Unidentified (> 2 mm)							3	0.01	2	0.01	5	0.05
Bone (> 2 mm)								0.01		0.70		
Residue weight		2.89		2.88		38.24		43.04		147.79		
Total:	4	3.92	2	3.66	100	52.39	73	58.54	617	236.12	796	8.12

Table 4.5. Old Town 2 Botanical Remains.

Feature #	4		6		7		10		11		14		16		TOTAL	STANDARDIZED
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Count	Count/L
Nutshell (Total)											228	2.00	14	0.09	242	1.24
Hickory (> 2 mm)											142	1.79	8	0.08	150	0.77
Hickory (< 2 mm)											84	0.20	6	0.01	90	0.46
Acorn											2	0.01			2	0.01
Wood (Total)		1.14		0.99		5.97		1.12		54.30		37.93		2.11		
Bark											35	0.61			35	0.18
Seed (Total)	52		3		60				10		107		2		234	1.20
Fruits																
Persimmon											31	0.22			31	0.16
Strawberry																
c.f. Crabapple																
Maypops	4				4						15				23	0.12
Peach pit											34	1.11			34	0.17
Bramble	2				2						5				9	0.05
Nightshade									2						2	0.01
Blueberry											2				2	0.01
Grape									1		9				10	0.05
Squash																
Squash																
Wild/Weedy																
Goosefoot					1										1	0.01
Bulrush family																
Goose grass	46		1		49										96	0.49
Panic grass									2						2	0.01
Pokeweed					1								2		3	0.02
Grass family											1				1	0.01

Table 4.5. Old Town 2 Botanical Remains.

Feature #	4		6		7		10		11		14		16		TOTAL	STANDARDIZED
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Count	Count/L
Purslane family											2				2	0.01
Total Identified Seeds	52		1		57				5		99		2		216	1.10
Unidentified									5		2				7	0.04
Unidentifiable			2		3						6				11	0.06
Corn (Total)	12	0.02	7	0.06	28	0.12	1	0.01	19	0.07	721	4.98	38	0.08	826	4.23
Total Kernel Pieces			5	0.06	6	0.07			1	0.01	123	0.28			135	0.69
Kernel (> 2 mm)			4	0.06	5	0.07			1	0.01	44	0.26			54	0.28
Kernel (< 2 mm)			1		1						79	0.02			81	0.41
Total Cupule/Glume	12	0.02	2		22	0.05	1	0.01	18	0.06	577	3.42	38	0.08	670	3.43
Cupule/glume (> 2 mm)	7	0.02			11	0.04	1	0.01	6	0.06	252	3.00	7	0.04	284	1.45
Cupule/glume (< 2 mm)	5		2		11	0.01			12		325	0.42	31	0.04	386	1.97
Corn cob fragment											21	1.28			21	0.11
Corn glume																
Corn embryo																
Other botanicals (Total)		0.33		0.39	4	1.35	13	0.96	134	6.27	454	11.95	4	1.04	609	3.12
Amorphous					4	0.05	13	0.28	124	1.07	356	2.88	3	0.03	500	2.56
Bud (> 2 mm)																
Cucurbita rind (> 2 mm)											3	1.02	1	0.01	4	0.02
Cucurbita rind (< 2 mm)											1				1	0.01
Fungal matter? (> 2 mm)									10	0.02	14	0.06			24	0.12
Peach pit/nutshell											10	0.66			10	0.05
Pedicel/Peduncle (< 2 mm)											1	0.03			1	0.01
Uncarbonized (> 2 mm)		0.33		0.39		1.30		0.68		5.18		6.66		1.00		
Unidentified (> 2 mm)											69	0.64			69	0.35
Bone (> 2 mm)				0.09		0.09				0.39		1.02		0.03		
Residue weight		5.19		7.63		22.57		17.05		63.13		153.64		30.56		
Total:	64	6.68	10	9.16	92	30.10	14	19.14	163	124.16	1545	213.13	58	33.91	1946	9.95

Table 4.6. Old Town Unaffiliated Botanical Remains.

Feature #	1		19		21		22		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Count/L
Nutshell (Total)										
Hickory (> 2 mm)										
Hickory (< 2 mm)										
Acorn										
Wood (Total)		0.90		0.01		0.47		8.22		
Bark										
Seed (Total)	1						85	0.57	86	3.58
Fruits										
Persimmon										
Strawberry										
c.f. Crabapple							2		2	0.08
Maypops							16		16	0.67
Peach pit							64	0.57	64	2.67
Bramble										
Nightshade										
Blueberry										
Grape										
Squash										
Squash										
Wild/Weedy										
Goosefoot										
Bulrush family										
Jimsonweed							3		3	0.13
Goose grass										
Panic grass										
Pokeweed	1								1	0.04
Grass family										

Table 4.6. Old Town Unaffiliated Botanical Remains (continued).

Feature #	1		19		21		22		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Count/L
Purslane family										
Total Identified Seeds	1						85	0.57	86	3.58
Unidentified										
Unidentifiable										
Corn (Total)	2	0.02			2166	13.44	785	2.81	2953	123.04
Total Kernel Pieces	1	0.01							1	0.04
Kernel (> 2 mm)	1	0.01							1	0.04
Kernel (< 2 mm)										
Total Cupule/Glume	1	0.01			2055	7.26	782	2.67	2838	118.25
Cupule/glume (> 2 mm)	1	0.01			680	5.75	224	1.75	905	37.71
Cupule/glume (< 2 mm)					1375	1.51	558	0.92	1933	80.54
Corn cob fragment					111	6.18	3	0.14	114	4.75
Corn glume										
Corn embryo										
Other botanicals (Total)	1	0.11	1	0.12		0.49	48	0.38	50	2.08
Amorphous	1	0.01	1	0.01			21	0.13	23	0.96
Bud (> 2 mm)										
Cucurbita rind (> 2 mm)										
Cucurbita rind (< 2 mm)										
Fungal matter? (> 2 mm)										
Peach pit/nutshell							27	0.03	27	1.13
Pedicel/Peduncle (< 2 mm)										
Uncarbonized (> 2 mm)		0.10		0.11		0.49		0.22		
Unidentified (> 2 mm)										
Bone (> 2 mm)								0.11		
Residue weight		2.89		0.84		3.52		5.15		
Total:	4	3.92	1	0.97	2166	17.92	918	17.24	3089	128.71

Peach was the only European-introduced plant species recovered at the site. This is not to say that there were not other European foods present, but those foods were likely brought into the camp already processed. Peaches were one of the earliest crops adopted by southeastern Native Americans, and they were apparently easily incorporated into existing systems of plant cultivation. Gremillion (1993) suggested that peaches could be grown without pre-existing knowledge of peach husbandry because they were introduced to a number of tribes independent of European interactions. Despite the many purported benefits of peaches, there were no clearly identifiable remains found in the Old Town 1 occupation, and all of the peach from the Old Town 2 occupation came from two zones of the same feature. This may suggests that the plant was not heavily utilized at the site, and the recovered peach pits may even have been from fruit brought to the site from other sources further away. Alternatively, peach pit preservation and recovery could have simply been poor.

Accounts of the movement of troops during the American Revolution explained that invading forces sometimes burned down orchards when they destroyed towns (French 1977). One might expect that if British troops burned down the main Catawba town in 1780, they would have also burned down any orchards that might have been there. However, such an event need not have ended peach growing at the site: peaches are easily reestablished. It was particularly interesting that in Old Town 2 there were numerous fragments of peach pit as well as a variety of berries. One book on growing peach orchards recommended "if space is extra valuable and care is correspondingly good, bush fruits such as currants and gooseberries can be grown in these smaller spaces [between peach trees], at least for the first few years" (Waugh 1913: 181). Perhaps those remains came from an orchard that optimized space by planting plenty of other delicious foods or by encouraging/tolerating volunteers.

The full results of analysis of New Town are presented in table 4.7 and table 4.8. Table 4.7 gives the features attributed to site number SoC632, and table 4.8 gives site SoC635. I lacked a compelling reason to treat those two areas of New Town separately for the purpose of this report, so I will discuss the combined results. Mean charcoal density for all samples was 1.71 grams per liter and mean wood charcoal density was 0.32 grams per liter. There was very little corn recovered at New Town, even when standardized by count per liter. The kernel-to-cuple ratio was very high (12.0), suggesting that people at New Town were not growing much corn at the settlement. There was also very little nutshell at the site, though there were three different types of nut represented (walnut, acorn, and hickory).

New Town had 155 identifiable seeds representing several fruits, berries, and weedy plants. More than half the identifiable seeds at New Town were weathered but un-carbonized, despite being found in lower level contexts. Many of those un-carbonized seeds were from the copperleaf plant, for which I found no recorded economic use (Moerman 1998), but there were also significant amounts of un-carbonized maypops seeds, as well as some bramble and strawberry. Many weathered seeds were found at the Ayers Town site as well, so there may be some unusual preservation circumstances at these Catawba sites. For the time being, I have treated the un-carbonized seeds found at New Town as part of the archaeological record rather than modern intrusions. In addition to the weathered seeds, there were carbonized seeds from several fruits, berries, weeds, and a possible bean. Peach was the only European-introduced plant species recovered at the site. Overall, the botanical assemblage from New Town was very sparse, even when considering the density of materials to account for the lesser number of samples analyzed.

Table 4.7. New Town (SoC632) Botanical Remains.

Feature #	1		4		6		7		9		10		TOTAL	STANDARDIZED
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Count	Count/L
Nutshell (Total)					1	0.05							1	0.39
Hickory (>2 mm)														0.14
Hickory (<2 mm)														
Walnut														0.23
Acorn					1	0.05							1	0.01
Nutmeat														0.01
Wood (Total)		2.99				7.60		0.86		0.31		1.08		
Seed (Total)	52				22		32		1		4		111	1.63
Fruits	2						1						3	0.24
c.f. Bean	2												2	0.02
Blueberry							1						1	0.01
Grape														0.01
Peach pit														0.15
Persimmon														0.04
Sumac														0.01
Weathered Fruits	50				11						1		62	0.62
Bramble	4				2								6	0.06
Maypop	45				9						1		55	0.55
Strawberry	1												1	0.01
Wild/Weedy							2				1		3	0.30
Compositae														0.01
Grass family							2						2	0.02
Pokeweed											1		1	0.04
Pine cone														0.22
Sunflower														0.01

Table 4.7. New Town (SoC632) Botanical Remains (continued).

Feature #	632 1		632 4		632 6		632 7		632 9		632 10		TOTAL	STANDARDIZED
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Count	Count/L
Weathered Wild/Weedy					8		29		1		1		39	0.39
Copperleaf					7		29		1		1		38	0.38
Sweet clover					1								1	0.01
Total Identified Seeds	52				19		32		1		3		107	1.55
Unidentified														0.04
Unidentifiable					3						1		4	0.04
Corn (Total)	5	0.06			25	0.06							30	0.40
Kernel Pieces	5	0.06			23	0.05							28	0.36
Kernel (>2mm)	2	0.06			3	0.04							5	0.10
Kernel (<2mm)	3				20	0.01							23	0.26
Cupule/Glume					1	0.01							1	0.01
Cupule/glume (>2mm)					1	0.01							1	0.01
Cupule/glume (<2mm)														
Corn cob fragment														0.01
Corn glume														0.01
Corn embryo					1								1	0.01
Other bot. (Total)	1	2.61		0.07	3	2.95	2	12.35		3.10		1.71	6	0.17
Amorphous							1	0.03					1	0.01
Plant part	1				3								4	0.08
Uncarbonized (>2 mm)		2.61		0.07		2.95		12.32		3.10		1.71		
Unidentified (>2 mm)							1						1	0.08
Bone (>2 mm)														
Residue Wt.		12.32		1.60		12.14		17.17		5.51		5.04		
Total:	58	17.98		1.67	51	22.80	34	30.38	1	8.92	4	7.83	111	2.59

Table 4.8. New Town (SoC635) Botanical Remains.

Feature #	8		9		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Count/L
Nutshell (Total)	13	0.92	25	1.10	38	1.30
Hickory (>2 mm)	10	0.51	4	0.28	14	0.47
Hickory (<2 mm)						
Walnut	2	0.36	21	0.82	23	0.77
Acorn						0.03
Nutmeat	1	0.05			1	0.03
Wood (Total)		19.64		9.31		
Seed (Total)	23		29		52	5.43
Fruits	7		14		21	0.80
c.f. Bean						0.07
Blueberry						0.03
Grape			1		1	0.03
Peach pit	5		10		15	0.50
Persimmon	1		3		4	0.13
Sumac	1				1	0.03
Weathered Fruits						2.07
Bramble						0.20
Maypop						1.83
Strawberry						0.03
Wild/Weedy	12		15		27	1.00
Compositae	1				1	0.03
Grass family						0.07
Pokeweed	2		1		3	0.13
Pine cone	8		14		22	0.73
Sunflower	1				1	0.03
Weathered Wild/Weedy						1.30
Copperleaf						1.27
Sweet clover						0.03
Total Identified Seeds	19		29		48	5.17
Unidentified	4				4	0.13
Unidentifiable						0.13
Corn (Total)	4		6	0.12	10	1.33
Kernel Pieces	3		5	0.06	8	1.20
Kernel (>2mm)			5	0.06	5	0.33
Kernel (<2mm)	3				3	0.87
Cupule/Glume						0.03
Cupule/glume (>2mm)						0.03
Cupule/glume (<2mm)						
Corn cob fragment			1	0.06	1	0.03
Corn glume	1				1	0.03

Table 4.8. New Town (SoC635) Botanical Remains (continued).

Feature #	8		9		TOTAL	STANDARDIZED
	Count	Weight	Count	Weight	Count	Count/L
Corn embryo						0.03
Other bot. (Total)	7	13.13	4	17.44	11	0.57
Amorphous						0.03
Plant part			4	0.21	4	0.27
Uncarbonized (>2 mm)		13.13		17.23		
Unidentified (>2 mm)	7				7	0.27
Bone (>2 mm)		0.12		0.19		
Residue Wt.		37.42		14.26		
Total:	47	71.23	64	42.42	111	8.63

CHAPTER 5: DIACHRONIC COMPARISON OF CATAWBA PLANT USE

After completing my analysis of the botanical assemblages from Old Town and New Town, I wanted to compare plant use at those sites to other Catawba and piedmont sites over time. My goal was to assess whether there were changes in plant use, what types of changes occurred, and whether those changes can be attributed to loss of traditional ecological knowledge. I first reviewed the assemblages from three sites excavated as part of the RLA Siouan Project. These sites, occupied between A.D. 1400 to 1710, are used as representatives of the foodways of the Catawba ancestors during the shatter zone period. After reviewing those sites, I compared plant remains from the five Catawba Project sites using correspondence analysis. Correspondence analysis is useful for considering multiple variables from multiple contexts, sites, or time periods, "producing solutions that can 'map' associations" (for detailed description of this technique see VanDerwarker 2010, see also Shennan 1997 and Statsoft, Inc. 2003). It analyzes simple two-way tables by measuring correspondence between columns and rows that give abundance or presence/absence data. Similar scores between row or column variables indicate a close relationship, which are plotted onto a graph. I grouped the botanical remains into categories that were economically important and broadly shared between the different contexts because so many taxa were only sporadically present and correspondence analysis does not work if there are too many 0 cells. I used SYSTAT software to compute the association between those categories. Based on the assemblages from the Siouan and Catawba Project sites, I concluded that there were changes in plant use among the Catawba over time,

particularly following the devastating 1759 smallpox epidemic. Table 5.1 summarizes the paleoethnobotanical evidence for change in plant use, along with the anticipated changes in TEK maintenance.

Table 5.1 Paleoethnobotanical Evidence for Change in Plant Use Among the Catawba Over Time.

	Time Period	Anticipated Changes in TEK	Archaeological Sites	Paleoethnobotanical Record
Shatter Zone	A.D. 1540-1715	Significant initial loss of knowledge, TEK less likely to be transmitted and maintained as large portion of population died or was forced to move	Wall (A.D. 1400-1600) Jenrette (A.D. 1650-1680) Fredricks (A.D. 1680-1710)	Diversity of gathered and traditional planted crops, including a variety of fruits and nuts as well as corn, beans, and squash. Watermelon and peach present at later sites.
Coalescence	A.D. 1715-1800	Men's transmission of TEK disrupted through ethnic soldiering and deer skin trade, loss of local contexts of knowledge and opportunities to maintain knowledge	*Pre-1759 Epidemic* Charraw Town (A.D. 1750-1759) Nassaw-Weyapee (A.D. 1750-1759)	Diversity of gathered plants, continued use of some traditional crops.
			Post-1759 Epidemic Old Town (A.D. 1762-1800) Ayers Town (A.D. 1761-1800)	Not strongly associated with gathered resources, some continued use of corn.
Post-Coalescence	A.D. 1800-present	Discard of women's farming and gathering TEK continues as pottery trade becomes more valuable	New Town (A.D. 1790-1820)	Sparse plant remains, small amounts of corn, nuts, and fruit.

Siouan Project Sites

First I wanted to compare the eighteenth and nineteenth century Catawba sites to earlier shatter zone period sites to see subsistence changes over a longer period. Data from the Wall (31OR11), Jenrette (31OR231A), and Fredricks (31OR231) sites strengthen the argument that

the Catawba utilized gathered resources to a lesser extent over time, particularly between the shatter zone and the end of the coalescent period (Gremillion 1995; Melton 2014). All three sites were excavated by archaeologists from the RLA as part of the long-running Siouan project. Located in the North Carolina piedmont near the Eno River, these sites were likely occupied by some of the Catawbas' ancestors. The Wall site (A.D. 1400 – 1600) predated European contact and shows a diversity of gathered resources. Five fruit/berry taxa and four nut taxa were found there, along with goosefoot, knotweed (*Polygonum* sp.), sumpweed (*Iva annua*), and sunflower (Helianthus annuus) (Melton 2014). The Jenrette site (A.D. 1650 – 1680) was occupied during the Carolina Piedmont shatter zone time period, and still shows diversity of gathered resources. It contained seven fruit/berry taxa, three nut taxa, along with goosefoot, knotweed, and sumpweed. Both sites combined had ubiquities of peach, acorn, persimmon, grape, and walnut between 11 to 30 percent, and acorn, corn, and hickory were highly ubiquitous at both (Melton 2014).

The Fredricks site (A.D. 1680 – 1710) is believed to be the site of historic Occaneechi Town and was occupied towards the end of the Piedmont shatter zone. Gremillion's (1995) analysis led her to suggest that the people living at Fredricks practiced a largely traditional style of subsistence, growing crops of corn, bean, squash, and bottle gourd (*Lagenaria siceraria*), and the European-introduced peaches and watermelon (*Citrus lanatus*). Along with hunting and fishing, people were also clearly gathering many wild resources. Fourteen fruit/berry taxa are represented, three different nut taxa, as well as sunflower and goosefoot. Acorn, hickory, and corn were highly ubiquitous. Grape, maypops, nightshade, peach, persimmon, sumac, and walnut all had ubiquities between 10 to 25 percent (Gremillion 1995).

The Old Town assemblage had nine fruit/berry taxa and two nut taxa. Bramble and maypops had ubiquities of 25 percent, grape had a ubiquity of 19 percent, and all other

fruit/berry taxa had ubiquities of less than 13 percent. Hickory had a ubiquity of 19 percent and acorn had a ubiquity of six percent. Goosefoot was present at the site, but no sunflower, sumpweed, or knotweed. The New Town assemblage had 7 fruit/berry taxa and three nut taxa. The nut taxa all had ubiquities of 25 percent, and the fruit taxa all had ubiquities of 25 percent or less. One sunflower seed was recovered, but there were no other starchy or oily seeds present.

Juxtaposition of two of the latest sites, Old Town and New Town, with the much earlier Wall, Jenrette, and Fredricks sites shows a change in plant use over time, with less diversity of gathered plants and less extensive use of such plants at Old Town and New Town compared to the three Siouan sites. Interestingly, when Fitts (2015: 371) compared diversity at Charraw Town and Nassaw-Weyapee with the Siouan sites and a number of Cherokee sites (using data from VanDerwarker et al. 2013), she found an increase in diversity at the two early Catawba sites. I propose that while Catawba women may have pursued a risk-averse diversification strategy prior to the 1759 smallpox epidemic, the ensuing demographic collapse and the significant changes in economic strategies may have prompted the Catawba to abandon diversification of subsistence strategies in favor of more profitable ventures like selling pottery and leasing out land.

Catawba Plant Use from A.D. 1750-1820

Based on the comparison between the Siouan and Catawba sites, it appears that the 70-year period covered by the Catawba Project sites included significant changes in foodways that may have related to loss of TEK. Using the botanical data from Charraw Town (1750-1759), Nassaw-Weyapee (1750-1759), Old Town (1762-1800), Ayers Town (1780-1800), and New Town (1800-1820), I was able to track changes occurring over a 70-year period with a well-controlled time line of events. From the data published in Fitts (2015) on Charraw Town and

Nassaw-Weyapee, I compiled counts of plant remains from broad, economically important categories to compare using correspondence analysis. I created the plot seen in Figure 5.1, with place names on a separate plot from plant names to make it easier to read (the raw data analyzed and the resulting statistical data are given in Appendix B).

I identified three major patterns of association in the correspondence plot. Beans/cowpeas, peaches, nuts, and fruits are clustered together near Charraw Town and Nassaw-Weyapee. Corn cupules were pulled farther to the right and associated with Ayers Town and Old Town. New Town was pulled far away from the other clusters, and corn kernels appear to have been pulled down more based on their association with New Town. Based on these clusters, I argue that there was a change in plant use over time as people shifted away from foraging and farming as important economic activities. The two earliest, pre-coalescent sites – Charraw Town and Nassaw-Weyapee – are associated with a more diverse spread of farmed and gathered plants. Old Town and Ayers Town, both post-coalescent sites, appear to have moved away from this variety of resources to be most reliant on corn (though even that may have been primarily produced for travelers) (Liston 1797: 27). New Town, the latest site, was not strongly associated with any of the botanical resources, suggesting that residents of that site had moved away from either foraging or farming as ways of making a living. The lack of food storage facilities at the New Town site and written records from people who had visited the town stating that the Catawba had mostly abandoned agriculture at that point support this idea (Davis et al. 2014: 62).

The major break in plant use practices appears to have occurred following the 1759 epidemic, when a large portion of the Catawba population died. The loss of so many people, compounded by the need to move temporarily for the year following the epidemic and to move again during the American Revolution, would have disrupted the transfer of TEK to younger

generations. This disjunction in the transmission of knowledge may have been one of the factors effecting the diachronic change in plant use at Catawba sites.

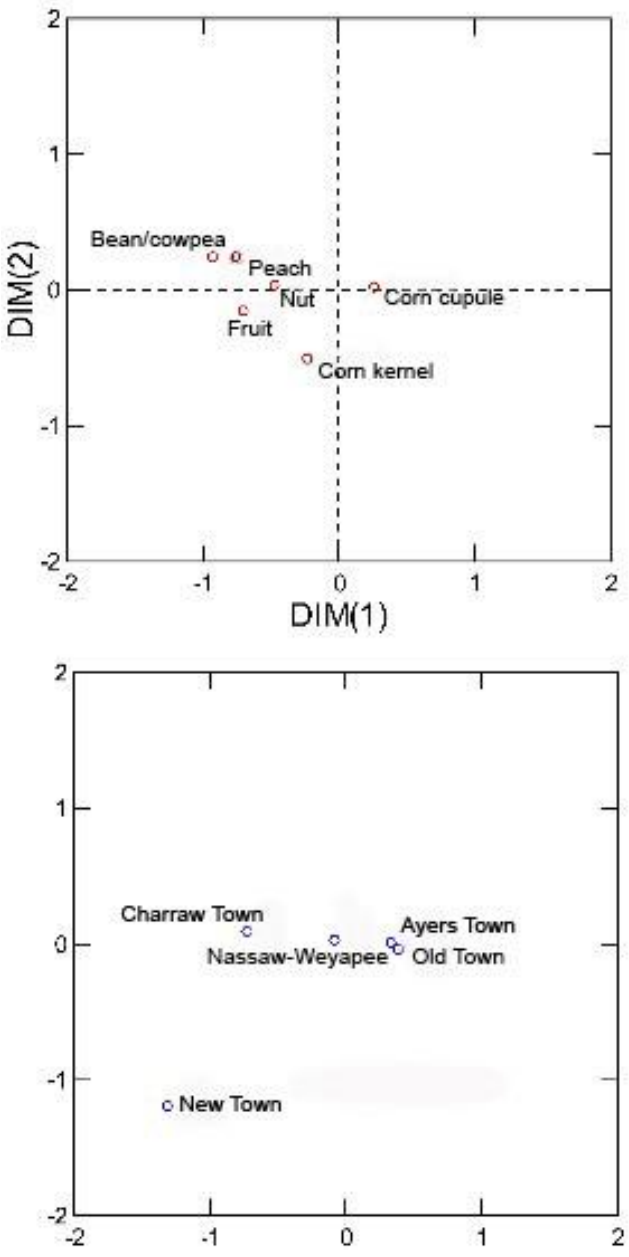

Figure 5.1 Correspondence Analysis Graph of Botanical Remains from Five Catawba Sites

CHAPTER 6: INTEGRATING BOTANICAL AND FAUNAL ANALYSIS

To get a more holistic sense of how Catawba foodways changed over time, I compared the faunal and botanical assemblages from the five Catawba Project sites. Faunal remains from Old Town, New Town, and Ayers Town were analyzed by Dr. Thomas Whyte at Appalachian State University and are summarized in the research report for Ayers Town using number of identified specimens (NISP) per taxon (Whyte 2014). Whyte also analyzed faunal materials from Nassaw-Weyapee, while Ashley Peles analyzed Charraw Town materials. Both of those data sets are published in Fitts (2015). Table 6.1 summarizes the faunal remains from all five sites using NISP, and Appendix A shows the faunal remains from Old Town based on feature and temporal affiliation. VanDerwarker (2010) previously demonstrated the utility of correspondence analysis for integrating botanical and faunal remains in archaeological contexts to understand change in diet over time. I used correspondence analysis on botanical and faunal materials from these five sites to get a better sense of the whole Catawba foodways system and whether there was a loss in traditional ecological knowledge over time.

An initial look at the faunal assemblages shows that there was variation in animal use at Catawba sites. Records of historic Catawba fishing practices are well established (Speck 1946), and the assemblages from the three later sites – Old Town, Ayers Town, and New Town - contained a wide array of wild species with large quantities of fish remains. Fitts (2015: 359) remarked on the unexpectedly poor representation of fish in the faunal assemblages from the earlier Charraw Town and Nassaw-Weyapee. She noted that samples were collected through

waterscreening and flotation, so sampling bias probably was not responsible for this pattern, though she does not discount other possible preservation issues. The Catawba also ate a variety of different birds, which is apparent both from the archaeological record at the later sites and from Speck's (1946) discussion of Catawba hunting practices (Whyte 2014). Some specimens from the five sites were likely intrusions into the archaeological record and not representative of what the Catawba ate, such as snails and toads. Though other tribes in the Carolina Piedmont occasionally ate toads, there are no reports of the historic Catawba using toads as food so that skeletal material may be the result of natural entrapment (Lefler 1967: 132; Whyte 2014). Domestic animal remains (chicken, pig, horse, dog and cow) as well as white-tailed deer were present to varying degrees at all of the Catawba sites.

Ethnographic and ethnohistorical accounts make it clear that the Catawba never entirely abandoned their hunting practices, but these practices may not have contributed substantially to the later Catawba diet (Jones 1815; Speck 1946). The shift from a focus on hunting to tending domestic animals may be due to ecological degradation, depletion of the deer population as a result of the deerskin trade, and the increased conversion of land into agricultural fields for growing cotton and corn (Whyte 2014). Several sources suggest that big game was no longer available due to these ecological changes, leaving only smaller animals such as rabbits and squirrels on the landscape (Brown 1966; Speck 1946). Speck (1946: 5) suggested that the Catawba made this choice to focus less on hunting and more on domesticated animals actively: "Not finding it compatible with their big game and campaigning tradition to accept a transitional status as small animal hunters and fishermen, they held their place in a depleted faunal environment, and became a supine community."

Table 6.1 Faunal Remains from Five Catawba Towns.

Taxon	Common Name	Charraw Town n=8 NISP	Nassaw-Weyapee n=10 NISP	Old Town n=18 NISP	Ayers Town n=51 NISP	New Town n=9 NISP
Pleuroceridae	Aquatic Snail			1		1
Triodopsis albolabris	White Lipped Snail					1
Triodopsis sp.	Triodopsis Snail					1
Stylommatophora	Terrestrial Snail		2	13	3	22
Elliptio icterina	Variable Spike				1	2
Elliptio complanata	Eastern Elliptio				11	
Elliptio sp.	Freshwater Mussel				1	6
Unionidae	Freshwater Mussel		1	29	38	13
Mollusca	Mollusk					1
cf. *Amia calva*	Bowfin	1				
Lepisosteus osseus	Longnose Gar	1			4	
Esox sp.	Pickerel			1	28	
Nocomis leptocephalus	Bluehead Chub				2	
Carpoides cyprinus	Quillback				1	
Moxostoma cf. *carolina*	Carolina Redhorse			2		4
Moxostoma collpasum	Notchclip Redhorse				2	
Scartomyzon braesius	Brassy Jumprock			1		
Moxostoma sp.	Redhorse			1	3	
Catostomidae	Sucker	1		16		
Ameiurus brunneus	Snail Bullhead			4	11	2
A. catus	White Catfish	6			26	1
A. nebulosus	Brown Bullhead				3	1
A. platycephalus	Flat Bullhead				4	4
Ameiurus sp.	Bullhead Catfish		1	50	128	49
Lepomis auritus	Redbreast Sunfish				1	
Lepomis gullosus	Warmouth Sunfish				3	
Lepomis sp.	Sunfish			4	20	1
Micropterus salmoides	Largemouth Bass	1	1	4	38	1
Pomoxis annularis	White Crappie	1				
Centrarchidae	Bass/Sunfish			13	34	2
Perciformes	Ray-finned Fish	4				
Osteichthyes	Bony Fish	15	1	161	855	156
Caudata	Salamander			3		
Bufo sp.	Toad			40	25	2
Rana sp.	Frog				1	
Kinosternidae	Musk Turtle				1	1
Chrsemys picta	Painted Turtle	11		8		

Table 6.1 Faunal Remains from Five Catawba Towns (continued).

Taxon	Common Name	Charraw Town n=8 NISP	Nassaw-Weyapee n=10 NISP	Old Town n=18 NISP	Ayers Town n=51 NISP	New Town n=9 NISP
Chrsemys sp.	Slider			1	10	1
Terrapene carolina	Eastern Box Turtle	30	24	12	39	9
cf. *Chelydra serpentina*	Snapping Turtle	1				
cf. *Pseudemys* sp.	Cooters	30				
Testudines	Turtle	89	76	23	44	45
cf. *Nerodia* sp.	Water Snake	3				
Nerodia	Unidentified Snake	1	3			
Anas platyrhynchos	Mallard				2	
Meleagris gallopavo	Wild Turkey	1		7	20	
Gallus gallus	Domestic Chicken			15	31	1
Zenaida macroura	Mourning Dove				1	
Colaptes auratus	Common Flicker				7	
Picidae	Woodpecker				1	1
Cyanocitta cristata	Eastern Blue Jay				1	
Mimidae	Mimic Thrush				1	
Fringilidae	Sparrow				4	
Passeriformes	Perching Bird	3	1	4	17	2
Aves (small)	Small Bird				3	
Aves (medium)	Medium Bird	6		1	2	
Aves (large)	Large Bird	10	21	60	88	7
Aves (indeterminate size)	Bird	17	1	2	79	1
Didelphis virginiana	Opossum				7	
Canis familiaris	Domestic Dog				1	
Canis sp.	Dog/Wolf	2			2	
Urocyon cinereoargenteus	Gray Fox	1	1			
Ursus americanus	Black Bear	41	11		1	1
Mephitis mephitis	Striped Skunk		3			
Ondatra zibethicus	Muskrat		3			
Procyon lotor	Raccoon		1		1	
Carnivora	Carnivore	3		2		
Mus musculus	House mouse			6		
Peromyscus sp.	Deer mouse					1
Rattus norvegicus	Norway Rat			9		
Muridae	Old World Rat			1		
Sciurus carolinensis	Gray Squirrel				39	
Sciurus niger	Fox Squirrel					1

Table 6.1 Faunal Remains from Five Catawba Towns (continued).

Taxon	Common Name	Charraw Town n=8 NISP	Nassaw-Weyapee n=10 NISP	Old Town n=18 NISP	Ayers Town n=51 NISP	New Town n=9 NISP
Sciurus sp.	Tree Squirrel		5	4	13	1
Rodentia	Rodent			7		
Sylvilagus sp.	Cottontail			10	7	1
Equus sp.	Horse/Mule					1
Odocoileus virginianus	White-tailed Deer	31	201	87	158	6
Cervidae	Deer/Elk				3	
Bos taurus	Domestic Cattle	4	24	12	24	6
Sus scrofa	Domestic Pig		4	125	144	69
Artiodactyla	Even-toed Mammal	66	1	7	13	1
Equus caballus	Domestic Horse				3	
Mammalia (large)	Large Mammal	19	105	210	246	31
Mammalia (medium)	Medium Mammal	1996				
Mammalia (small)	Small Mammal	13		7	35	2
Mammalia	Mammal	376	1767	1196	1494	228
Vertebrata	Vertebrate	Not Counted	Not Counted	Not Counted	Not Counted	Not Counted
Total		2791	2258	2159	3785	687

Old Town and Ayers Town

After I compiled the faunal data, I first used correspondence analysis in an attempt to assess whether there were spatial differences in the botanical and faunal remains from Old Town (1762-1800) and the nearby contemporaneous village of Ayers Town (1781-1800). Researchers frequently cite the 1759 smallpox epidemic as the point at which the various ethnic groups loosely constituted as the Catawba coalesced into the unified group that identified as the Catawba Nation (Riggs et al. 2006). Before this period, Catawba settlements were separated based on ethnic identities (as they likely were at Charraw Town and Nassaw-Weyapee). Because Old Town and Ayers Town were occupied directly after this ethnogenesis, I was interested in seeing if there were spatial differences in foodways within Catawba towns suggestive of

different ethnic identities, something that has been observed at other archaeological sites (Bush 2004; Lightfoot 1998). Foodways are frequently cited as one of the most conservative aspects of culture, being carefully maintained and preserved even after cultural groups merge (Farb and Armelagos 1980). I wanted to explore the possibility that different ethnic foodways might still have been practiced even after the Nation had otherwise become unified.

Unfortunately, the vast majority of botanical materials from Old Town came from three pit features: Feature 18 (Old Town 1) and Features 14 and 16 (Old Town 2). The faunal materials from Old Town were also focused heavily in several features: Features 2 and 18 (Old Town 1) and Features 11 and 14 (Old Town 2) account for nearly all recovered faunal remains (see Appendix A for breakdown of faunal remains by feature at Old Town). This limited sample size derailed my initial desire to assess the spatial distribution of plant remains within the sites: with so few features generating large quantities of plant materials, correspondence analysis that compared features yielded no interesting patterns. There may still have been differences at the household scale in foodways based on tribal identity, but those differences were not visible in the botanical and faunal data.

I made a final attempt to assess changes in Catawba foodways immediately following the 1759 epidemic through a comparison of remains from the Old Town 1, Old Town 2, and Ayers Town occupations. Figure 6.1 shows the correspondence analysis graph with the associations between the different categories for Old Town 1, Old Town 2, and Ayers Town (data tables are presented in Appendix B).

White-tailed deer is almost exactly on the center of the axes of Factor 1 and Factor 2, suggesting that there was little to no variance in its presence at the three contexts. Domesticated animals are pulled towards the Old Town occupations, and the association is especially strong

with Old Town 1. Ayers Town had a much stronger association with the small mammals, fish and birds, though this prevalence of smaller animals is likely the result of differential taphonomy (Riggs 2015, personal communication). People at Ayers Town collected acorn, but the other wild gathered plant foods (hickory, fruits, and berries) were much more strongly associated with the Old Town 2 occupation. This presents an interesting split between where wild animal and wild plant sources were being used.

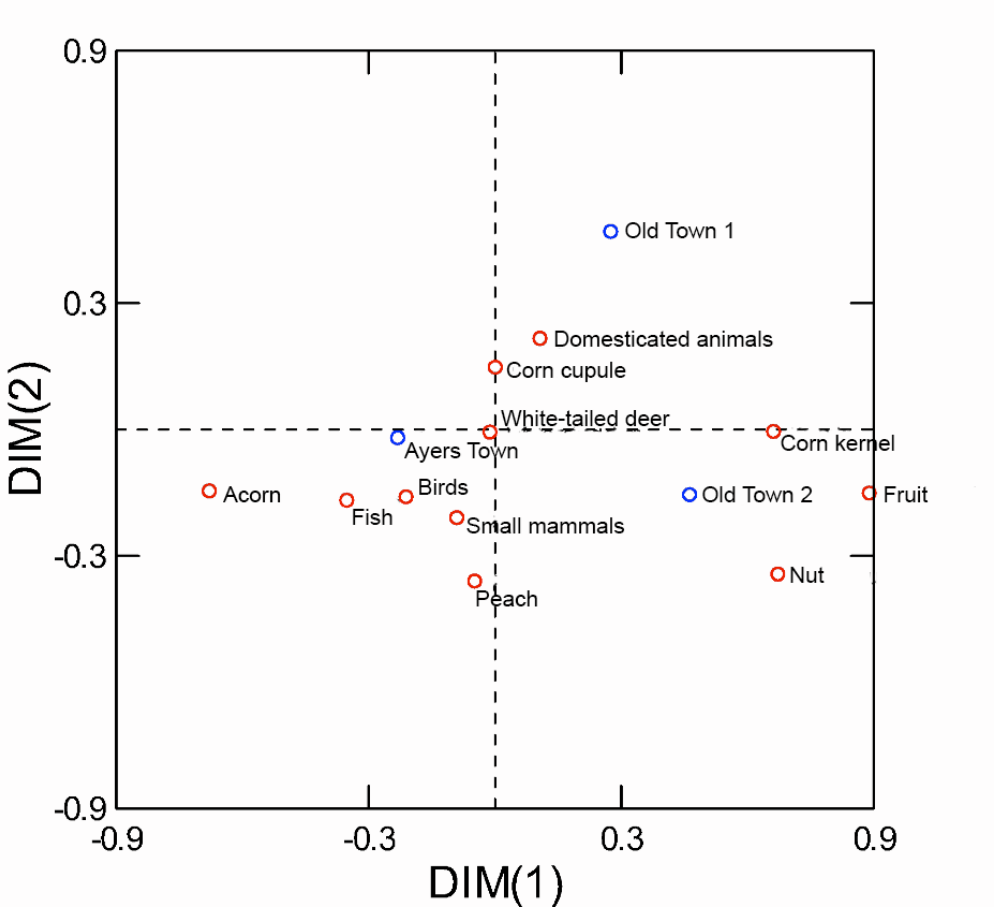

Figure 6.1 Correspondence Analysis of Botanical and Faunal Remains from Old Town 1, Old Town 2, and Ayers Town

Peach was associated with the Old Town 2 and Ayers Town contexts, both slightly later occupations. Corn cupules showed only a little variance along the second component, pulling them slightly more towards Old Town 1, but corn kernels had a more dramatic variation that put

them closer to Old Town 2. Perhaps people at Old Town 2 imported more food rather than growing and processing all of their own corn. The data from Old Town suggested that domesticated animals became more important resources than hunted animals, and that corn may have been increasingly imported from other places (particularly during Old Town 2) (Plane 2004). Evidence from Ayers Town also suggests some change in corn growing or processing, though not an increase in importation.

In his discussion of the faunal assemblages from Old Town, Ayers Town, and New Town, Whyte (2014: 254) noted differences in the abundance of deer and domesticated animals at the site. While at Ayers Town deer remains were more abundant than those of domesticated animals, at Old Town and New Town the opposite was found. Whyte argued that this would not be due to temporal or geographic distances and may instead reflect ethnic preferences or differences in degree of participation in the European market economy. He stated that the pattern seen at Old Town and New Town may reflect a diminished interest in hunting and increased interest in domestic animals. Though this analysis suggested that there may have been some differences at these post-coalescence sites that could have been related to differing ethnic identities, ultimately it was difficult to say anything conclusive based on the data.

Integrating Botanical and Faunal Remains from A.D. 1750-1820

For my final analysis, I put together botanical and faunal data from all five Catawba sites. The resulting correspondence plot (Figure 6.2) pulls together many of the trends that I noted in the previous analyses. Charraw Town and Nassaw-Weyapee are clustered more to the left side of the plot with peach, nuts, fruits, and beans/cowpeas, Old Town is towards the center of the plot with corn kernels and cupules and white-tailed deer, Ayers Town is slightly to the right of Old

Town and associated with fish, birds, and domesticated animals, and New Town is to the far right of the plot away from most other clusters of data.

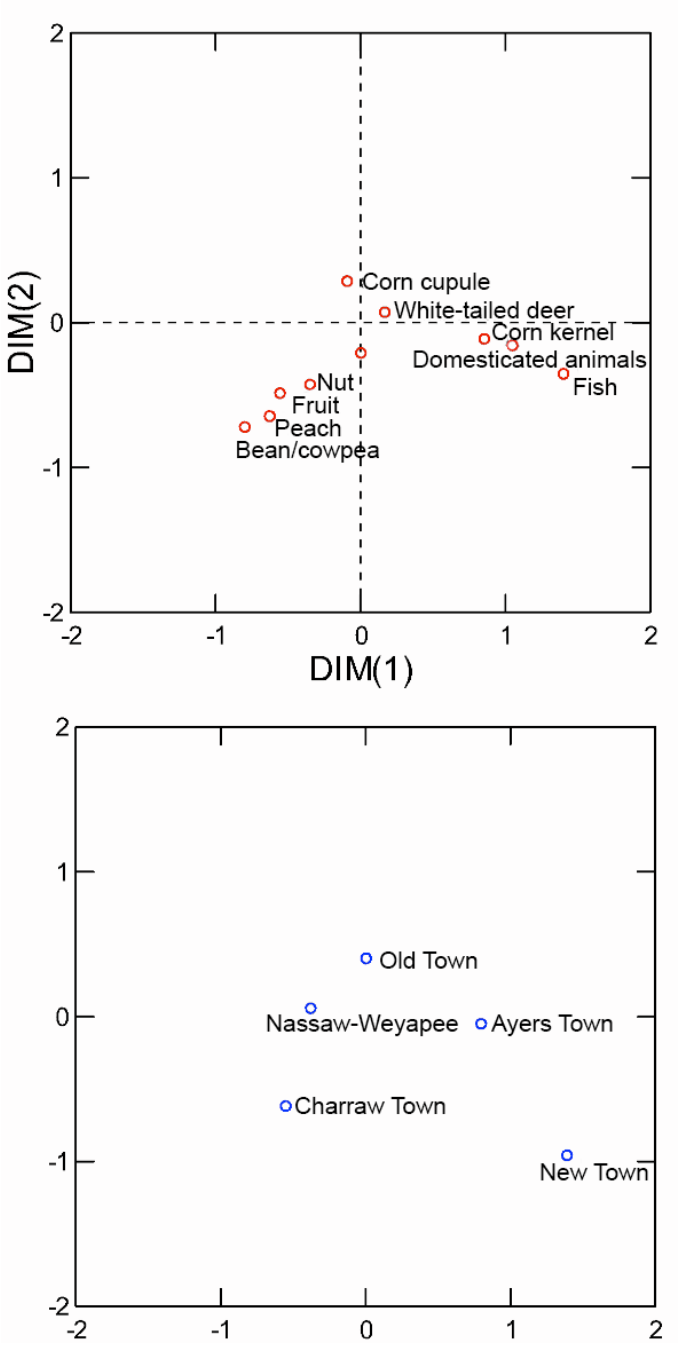

Figure 6.2 Correspondence Analysis of Botanical and Faunal Remains from Catawba Towns

This plot seems to confirm that over time gathered, hunted, and farmed resources were less visible contributors to the Catawba diet as the ceramic industry became more important as a

way of obtaining money for food. However, the plot also suggests that the Catawba people may have experimented with different strategies at different times, rather than uniformly abandoning their own subsistence production at one time. Gathering plants and growing more diverse crops seems to have fallen out of practice first, and hunting animals and tending domesticated animals appears to have increased in importance for a time. These differences in when different subsistence strategies were practiced and abandoned could be, as Whyte suggested, attributable to ethnic differences and varying levels of engagement in the European capitalist market, and may have been occurring at a household level. The disparate timing of these changes might also be attributed to variation in how different groups within the Catawba Nation were affected by changing economies and loss of TEK, particularly along gender lines. Catawba women were traditionally responsible for growing and gathering plants, but following the final coalescence they became far more heavily engaged in the pottery trade. Catawba men had been the primary hunters and were less involved in pottery production, so they may have retained their engagement with traditional subsistence practices for a longer time.

CHAPTER 7: CHANGING ECONOMIC STRATEGIES AT CATAWBA SITES

There were significant changes in Catawba foodways over time evident in the archaeological record. Based on the ethnographic and ethnohistorical record, I have argued that those changes were due in part to loss and discard of traditional ecological knowledge that limited the success of farming and foraging as subsistence strategies and made other economic ventures more appealing. The ceramic assemblages recovered from Catawba sites show how the Catawba adjusted their economic activities to a more successful colonial strategy.

Generally ceramics forms are useful for determining what type of meals people were cooking and serving, but this issue is more complicated at Catawba sites. Possibly as early as the 1750s, Catawba potters began reproducing English style wares for sale (Plane 2011; Riggs et al. 2006). Trade of Catawba ceramics became a substantial part of the Nation's economic system, particularly following the American Civil War. This means that some of the ceramics found at Old Town and New Town were likely produced for sale, and not for use by the Catawba themselves (though they certainly used some of the pottery for their own meals). English style pottery from nearby New Town (1781-1820) showed clear use wear marks, demonstrating that the Catawba used the new style of pottery in domestic contexts (Riggs et al. 2006: 72). Indeed, some of the new forms recovered from New Town, such as a small, one-handled globular pot suggested to be a porringer, might have been a welcome addition to a foodways system that traditionally focused on stews and porridges (Core 1967; Hally 1986; Riggs et al. 2006).

Late colonial-period contexts at Old Town yielded an assemblage of well-executed English style burnished pans, patty pans, teacups with footrings, polished bowls, and polygonal plates, indicating that Catawba potters were already skilled at producing copies of English ceramics prior to the American Revolution (Riggs 2010; Riggs et al. 2006). The Old Town pottery did not have the decorative treatments seen on vessels present in Catawba occupations prior to the final c.1760 coalescence. Those distinctive traditional decorations and forms likely derived from the traditions of various Piedmont refugee groups, and their loss suggests that group identity was becoming unified (Riggs 2010). Riggs (2010) attributed this new stylistic homogeneity of Catawba wares to market demands for pottery that would appeal to European and African customers as the ceramic trade expanded. The Catawbas did not abandon their traditional potting practices, but they changed them in such a way that benefited the tribe in the colonial market economy. Contemporary Catawba potters continue to make and sell these wares today (Riggs 2010).

Food preparation and serving vessels at Old Town reflected the newly unified Catawba identity and the introduced English influences. Creamware and pearlware sherds recovered at the site suggest that the Catawba villagers also used imported wares (Riggs 2010). The new pottery traditions and trade would have changed foodways in terms of how people cooked and prepared food. Hally's (1986) overview of pre-contact Indian foodways suggested broadly that Native Americans in the southeast rarely used individual dining vessels and that prepared food staples were primarily liquid in consistency (such as soups or stews). Ethnohistorical sources suggest that these dining patterns may have continued for some time into the historic period (Keys 1966; Liston 1797; Plane 2004). Comparison of ceramics between Old Town and New Town flatwares (plates and soup plates) and hollow wares (any bowls) indicate a proportional increase in the use

of flat wares over time and a proportional decrease in the use of hollow wares. While this does not indicate that there was a drastic shift from corporate to individualized dining, it does suggest some shifts in how people were eating. The presence of knives and forks at New Town also implies some consumption of portioned meals on individual serving ware rather than the traditional communal eating (Plane 2004).

In addition to changing Catawba cooking and serving practices, the new ceramic industry affected how members of the nation used their time. Calvin Jones visited New Town in 1815 and described the ceramic industry as being run primarily by the women, with men hunting and fishing (Jones 1815). Catawba potters traveled as far away as Charleston to sell their wares, and these itinerant sellers may have been the ones consuming the corn growing at Catawba villages (Riggs 2010). Pottery production had become one of the most important economic activities in the Catawba Nation and likely changed foodways both in terms of how people were cooking and serving foods and where Catawba chose to invest their time and energy. The significant change in Catawba ceramic style as the pottery trade became the primary industry of the nation coincided with the change in Catawba subsistence in which there appeared to be a huge decline in the investment in foraging and farming practices. While people living at Charraw Town and Nassaw-Weyapee may have experimented with a strategy of risk diversification, following the 1759 smallpox epidemic the loss of people, land, and knowledge made maintaining and supporting ceramic production skills more productive and successful.

Conclusion

Ethnographer Frank Speck believed that the Catawba lost traditional knowledge as they were forced to disperse in the nineteenth century:

> An inevitable result was to prevent the ancient spiritualistic legacy from being handed down through teaching, practice, or imitation. During this era of vagrancy we learn that something, at least, of the pride and spirit of the Nation was kept alive by a few of the more conservative-minded men and women. Among them one hears the name of old John Taylor, Billy George, Tom Stevens and John Scott, all chiefs at various times, and of women, Nancy Harris, Martha George and others. The poignant memories of poverty and plague seem to have left deeper impressions upon the children of the dispersion era than the narratives and rituals of the past. [Speck 1939: 21]

Speck continued on to say that whatever traditions did survive were preserved by accident rather than through clear intention, a statement at odds with those made by members of the Catawba Nation and other native groups (Bauer 2011; Mankiller 2011). While Speck's claim highlights the devastating effects of European actions on the Catawba, it does not give due credit to the Catawba people who worked hard to maintain their traditions.

The Catawba people who lived at the sites uncovered by the Catawba Project were the descendants of those who had survived the centuries of upheaval in the shatter zone, and were continuing to sustain their nation in a land ravaged by disease and war (Beck 2013; Ethridge 2009). Continual loss of large portions of the population through disease and movement from separate tribal homelands to the Catawba lands and later movement back and forth from that land created disconnects between generations and between people and their traditional land. The Catawba lifeway changed significantly as they found greater success selling pottery, renting land, and fighting in wars than they could have in growing, gathering, or hunting their own food. While not all Catawba traditional ecological knowledge was lost, comparison of ethnographic examples of TEK loss with the history of the Catawba people suggests that it was likely not what adults prioritized in teaching or what children valued as information to learn. The botanical, faunal, and ceramic assemblages from these Catawba sites show changes in foodways over time as the range of food resources being used became far more limited. Ethnohistorical documents

support the idea that the Catawba abandoned much of their previous subsistence techniques in favor of more profitable ventures. Nevertheless, though certain areas of traditional knowledge may have been lost, the Catawba have the longest continual pottery tradition in the United States, and continue to occupy their ancestral lands in South Carolina, suggesting that their sacrifices allowed for continuity of the Catawba culture as a whole.

APPENDIX A: OLD TOWN FAUNAL REMAINS BY FEATURE

Table A.1 Number of Identified Specimens (NISP) at Old Town 1 by Feature.

Common Name	2	5	12	13	15	17	18	Total
Aquatic Snail								0
Terrestrial Snail							2	2
Freshwater Mussel	4					3		7
Pickerel								0
Carolina Redhorse	2							2
Brassy Jumprock								0
Redhorse							1	1
Sucker	6						3	9
Snail Bullhead							3	3
Bullhead Catfish	1							1
Sunfish								0
Largemouth Bass								0
Bass/Sunfish	6							6
Bony Fish	6					4	6	16
Salamander								0
Toad							35	35
Painted Turtle								0
Slider								0
Eastern Box Turtle	3						4	7
Turtle	7						3	10
Wild Turkey								0
Domestic Chicken	7					2	1	10
Perching Bird							2	2
Medium-sized Bird								0
Large-sized Bird	7						2	9
Bird	1					1		2
Carnivore	1							1
House mouse								0
Norway Rat								0
Old World Rat								0
Tree Squirrel	3							3
Rodent								0
Cottontail								0
White-tailed Deer	1			2	1		23	27
Domestic Cattle	5						3	8
Domestic Pig	16		1	2		1	29	49
Even-toed Mammal	6							6
Large Mammal	58					1	78	137
Small Mammal	2						1	3
Mammal	168		1	31	13	14	304	531
Vertebrate								Not Counted
Total Counted Specimens:	310	0	2	35	14	26	500	887

Table A.2 Number of Identified Specimens (NISP) at Old Town 2 by Feature.

Common Name	4	6	7	10	11	14	16	Total
Aquatic Snail						1		1
Terrestrial Snail					6	5		11
Freshwater Mussel					3	16		19
Pickerel						1		1
Carolina Redhorse								0
Brassy Jumprock						1		1
Redhorse								0
Sucker						7		7
Snail Bullhead						1		1
Bullhead Catfish					8	41		49
Sunfish					2	1		3
Largemouth Bass						4		4
Bass/Sunfish					4	3		7
Bony Fish					15	130		145
Salamander					2	1		3
Toad					5			5
Painted Turtle						7	1	8
Slider						1		1
Eastern Box Turtle					1	4		5
Turtle					3	8	2	13
Wild Turkey					2	5		7
Domestic Chicken						5		5
Perching Bird						2		2
Medium-sized Bird								0
Large-sized Bird					27	19	4	50
Bird								0
Carnivore						1		1
House mouse						6		6
Norway Rat								0
Old World Rat								0
Tree Squirrel						1		1
Rodent		1						1
Cottontail					1	9		10
White-tailed Deer	1				4	25	25	55
Domestic Cattle					1	1		2
Domestic Pig	2		1		5	52	15	75
Even-toed Mammal				1				1
Large Mammal		1			15	31	6	53
Small Mammal						2		2
Mammal	7	6			123	328	55	519
Vertebrate								Not Counted
Total Counted Specimens	10	8	1	1	227	719	108	1074

Table A.3 Number of Identified Specimens (NISP) at Old Town Unaffiliated by Feature.

Common Name	1	19	21	22	Total
Aquatic Snail					
Terrestrial Snail					
Freshwater Mussel	3				3
Pickerel					
Carolina Redhorse					
Brassy Jumprock					
Redhorse					
Sucker					
Snail Bullhead					
Bullhead Catfish					
Sunfish	1				1
Largemouth Bass					
Bass/Sunfish					
Bony Fish					
Salamander					
Toad					
Painted Turtle					
Slider					
Eastern Box Turtle					
Turtle					
Wild Turkey					
Domestic Chicken					
Perching Bird					
Medium-sized Bird	1				1
Large-sized Bird					
Bird					
Carnivore					
House mouse					
Norway Rat	9				9
Old World Rat	1				1
Tree Squirrel					
Rodent	6				6
Cottontail					
White-tailed Deer	2				2
Domestic Cattle	2				2
Domestic Pig					
Even-toed Mammal					
Large Mammal	16				16
Small Mammal	2				2
Mammal	41		8		49
Vertebrate					Not counted
Total Counted Specimens	84	0	8	0	92

APPENDIX B: CORRESPONDENCE ANALYSIS DATA

Table B.1 Raw Data for Figure 5.1

	Charraw Town	Nassaw-Weyapee	Old Town	Ayers Town	New Town
Nut	576	607	285	215	39
Fruit	452	836	115	29	71
Beans/Cowpeas	51	65	0	0	2
Peach	550	539	98	76	15
Corn kernels	137	131	190	89	38
Corn cupules	1000	4362	4148	2004	2

Table B.2 Eigenvalues and % inertia by component for Figure 5.1

Component	Eigenvalue	% Inertia	Cumulative
1	0.166	84.700	84.700
2	0.016	8.344	93.044

Table B.3 Component Scores for Cases and Units for Figure 5.1

	Component 1	Component 2
UNITS		
Nut	-0.467	0.029
Fruit	-0.698	-0.160
Beans/Cowpeas	-0.922	0.237
Peach	-0.754	0.237
Corn kernels	-0.226	-0.512
Corn cupules	0.266	0.014
CASES		
Charraw Town	-0.720	0.086
Nassaw-Weyapee	-0.077	0.024
Old Town	0.391	-0.044
Ayers Town	0.340	0.005
New Town	-1.307	-1.199

Table B.4 Raw Data for Figure 6.1

	Old Town 1	Old Town 2	Ayers Town
Hickory Nut	33	240	146
Acorn	0	2	69
Corn Kernels	49	135	89
Corn Cupules	505	691	2004
Peach	0	34	76
Fruits	20	77	29
Domesticated animals	67	85	202
Fish	38	219	1163
Birds	13	61	224
Small Mammals	6	38	102
White-tailed deer	27	60	158

Table B.5 Eigenvalues and % inertia by component for Figure 6.1

Component	Eigenvalue	% Inertia	Cumulative
1	0.096	75.307	75.307
2	0.031	24.693	100

Table B.6 Component Scores for Cases and Units for Figure 6.1

	Component 1	Component 2
UNITS		
Hickory Nut	0.675	-0.346
Acorn	-0.676	-0.149
Kernels	0.664	-0.007
Cupules	0.004	0.145
Peach	-0.046	-0.363
Fruits	0.892	-0.154
Domesticated animals	0.109	0.214
Fish	-0.35	-0.171
Birds	-0.209	-0.162
Small Mammals	-0.088	-0.212
White-tailed deer	-0.009	-0.009
CASES		
Old Town 1	0.278	0.468
Old Town 2	0.465	-0.158
Ayers Town	0.35	0.01

Table B.7 Raw Data for Figure 6.2

	Charraw Town	Nassaw-Weyapee	Old Town	Ayers Town	New Town
Nut	576	607	285	215	39
Fruit	452	836	115	29	71
Bean/Cowpea	51	65	0	0	2
Peach	550	539	98	76	15
Corn kernel	137	131	190	89	38
Corn cupule	1000	4362	4148	2004	2
Domesticated Animals	5	28	152	202	77
Fish	31	3	257	1163	243
Birds	37	23	74	224	11
White-tailed Deer	31	201	87	158	6

Table B.8 Eigenvalues and % inertia by component for Figure 6.2

Component	Eigenvalue	% Inertia	Cumulative
1	0.278	64.562	64.562
2	0.125	28.987	93.549

Table B.9 Component Scores for Cases and Units for Figure 6.2

	Component 1	Component 2
UNITS		
Nut	-0.342	-0.433
Fruit	-0.549	-0.493
Beans/Cowpeas	-0.793	-0.726
Peach	-0.621	-0.651
Corn kernels	0.009	-0.215
Corn cupules	-0.086	0.280
Domesticated Animals	1.057	-0.162
Fish	1.409	-0.359
Birds	0.862	-0.118
White-tailed Deer	0.175	0.066
CASES		
Charraw Town	-0.546	-0.622
Nassaw-Weyapee	-0.373	0.052
Old Town	0.009	0.397
Ayers Town	0.805	-0.055
New Town	1.397	-0.963

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